

# Caste as community? Networks of social affinity in a south Indian village

Citation for published version (APA):

Arora, S., & Sanditov, B. (2009). *Caste as community? Networks of social affinity in a south Indian village*. UNU-MERIT, Maastricht Economic and Social Research and Training Centre on Innovation and Technology. UNU-MERIT Working Papers No. 037

## Document status and date:

Published: 01/01/2009

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

## Take down policy

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.



**UNITED NATIONS  
UNIVERSITY**

**UNU-MERIT**

**Working Paper Series**

**#2009-037**

**Caste as Community? Networks of social affinity in a South Indian  
village**

**Saurabh Arora and Bulat Sanditov**



# Caste as Community? Networks of social affinity in a South Indian village<sup>1</sup>

Saurabh Arora<sup>▲</sup> and Bulat Sanditov<sup>▲▲</sup>

<sup>▲</sup> School of Innovation Sciences, Eindhoven University of Technology, The Netherlands.

[s.arora@tue.nl](mailto:s.arora@tue.nl)

<sup>▲▲</sup> UNU-MERIT, Maastricht, The Netherlands. [sanditov@merit.unu.edu](mailto:sanditov@merit.unu.edu)

## Abstract

We examine three theories of caste and community using new data on social networks among residents of a south Indian village. The first theory treats individual caste groups as separated communities driven by the Brahmanical ideology of hierarchy based on purity and pollution. The second theory departs from the first by placing kings and landlords at the centre of rural (primeval) social structure. Here ritual giving by kings provides the glue that holds a community together by transferring inauspiciousness to gift-recipients and ensuring community welfare. The third theory, that may be treated as a corollary of the second, argues that powerful leaders in the religious and political domains act as patrons of people in their constituencies and forge a sense of community. The resulting community may be single or multi-caste. Using a community structure algorithm from social network analysis, we divide the network of the village into thirteen tight-knit clusters. We find that no cluster or community in the social network has exactly the same boundaries as a caste group in the village. Barring three exceptions, all clusters are multi-caste. Our results are most consistent with the third theory: each cluster has a patron/leader who represents the interests of his constituency at village-level fora and bridges caste and community divides.

## Keywords

Social networks, culture, caste, social change, community development, rural India

## JEL codes

Z13, O10

---

<sup>1</sup> We thank Koen Frenken for comments on an earlier draft, Luis Izquierdo for some indispensable advice on community detection algorithms, and participants at the ECIS summer workshop on complex networks for questions and suggestions. We are responsible for any remaining errors.

**UNU-MERIT Working Papers**  
**ISSN 1871-9872**

**Maastricht Economic and social Research and training centre on Innovation and Technology,  
UNU-MERIT**

*UNU-MERIT Working Papers intend to disseminate preliminary results of research carried out at the Centre to stimulate discussion on the issues raised.*

## 1. Introduction: caste and rural India

Caste is believed to define India. It is the single most powerful symbol for the Indian social world, rural and urban. Although this ‘caste as India’ assertion has been questioned and critiqued during the last three decades by anthropologists and historians alike for distorting our understanding of Indian society (see Appadurai 1986; Inden 1990; Chatterjee 1993; and Dirks 2001), it remains alive and kicking in everyday consciousness in India and abroad. For social scientists, even when caste is not the sole emblem of ‘modern’ and ‘traditional’ India, it is still believed to be central to understanding Indian social reality (see for example, Marriott 1969; Fuller 1996a). Two images of caste are central to this understanding of Indian society: caste as community and caste as maker of dominance and hierarchy laid down at birth. In this paper, we compare the first aspect of this ‘book view’ of caste with a ‘field view’ (Béteille 1991), using new data on the social network of a multi-caste village in Andhra Pradesh (south-east India). In particular, we study the influence of caste on network structure: the extent to which members of the same caste form friendship relations with each other, manifesting as tight-knit cliques. In other words, we attempt to understand the cultural underpinnings of emergent network structure of affinal relationships in the village. The results allow us to reflect on the negotiation of caste-based identity at the village level and identify other possible drivers of community in rural India. In order to delineate these cliques, we apply quantitative methods for identifying community structure in networks developed by Newman (2006).

Study of ‘village India’ was a popular enterprise among sociologists and anthropologists in post-independence India of 1950’s until the 1970’s (see for example the work of Srinivas 1955; 1959; 1975; the papers collected in Marriott 1955; Fordham Norr 1976; and Thorner 1954 for a review of some early studies). These scholars believed village India to be a mirror of larger Indian society, most of which was agrarian then as now. The village studies have provided an in-depth understanding of the social structure in Indian villages in terms of inter-caste relationships. They have in general also highlighted the importance of links connecting a village to the outside world. However, to the best of our knowledge, ours is the first study that has mapped the social networks of a village’s inhabitants, despite an early paper on rural networks by two prominent sociologists (Srinivas and Béteille 1964). Srinivas and Béteille do not map any actual networks but reflect on the changing nature of social relations in rural India where traditional ties based solely on caste or lineage may be getting loosened. To understand the nature of this social change, they then call for studies that trace intra- and extra-village links in the three institutional areas of economic exchange, political connections, and kinship relations.

This relative neglect of interpersonal networks of village India may be due to the influence of Dumont’s (1980 [1970]) study of the caste system, where he argued that the ideology of inter-caste hierarchy is the only way to understand Indian society and inter-caste relations are sufficient for explaining the rural (primeval) Indian socio-economic structure. In an earlier work, Dumont and Pocock (1957) affirmed that deep caste-based divisions make the idea of a unitary village impossible (Srinivas 1975). Even the gram panchayat (or village council, simply GP from now on), according to Dumont, should not be viewed as a corporate organization of a village but that of the *dominant caste* in the village (Wade 1988). The term ‘dominant caste’ was coined by Srinivas (1955 [2002: 57]): “A caste may be said to be ‘dominant’ when it preponderates numerically over the other castes, and when it also wields preponderant economic and political power. A large and powerful caste group can dominate more easily if its position in the local caste hierarchy is not too

low.” Then, according to Dumontian orthodoxy, all other ideologies including the one rewarding individuality or allegiance to one’s village as incompatible with the central ideology of inter-caste hierarchy (Marriot 1969; Mines 1994). As a result, individuals and their potentially diverse intra- and extra-village networks are pushed into the background as hierarchical inter-caste relations provide the only true insight on Indian society.

As we show in the present paper, interpersonal (social) network analysis (SNA) is particularly suited to capturing the affinity among persons and groups beyond caste community or hierarchy. In the first instance, network analysis of interpersonal relations in the village allows one to eschew the focus on dominant castes, or formulate a Brahmanical interpretation of the local caste system. Secondly, tight-knit social groups in the village are not simply synonymous with an individual’s caste-based group but may be formed by individuals from multiple castes. Using network analytic techniques, we divide the social network of the village into different tight-knit groups or communities. We then compare the membership of these groups to caste affiliations. We find that most tight-knit groups in the village are composed of people belonging to two or more castes and that factors other than caste-based affinity may be driving friendship relations among the villagers. Out of the latter factors, we focus on entrepreneurial individuals who transcend the ‘traditional’ barriers of caste by acting as representatives of multi-caste communities at various village-level fora.

The paper is structured as follows. In section 2, we first present an overview of the caste system and briefly outline the two main theoretical views on caste. Then, taking Dumont’s view of caste as a starting point, because it is still one of the most detailed analyses available in the literature, we outline various factors in caste ‘tradition’ and its post-colonial evolution, which are considered to drive the separation of castes and foster caste-based collective identity and community. This discussion allows us to appreciate caste as an evolving institution – an integral part of the social change taking place in rural India – and thus avoid the pitfall of treating village India as bastion of stable Hindu tradition. In section 3, we introduce the social economy of the village under study and outline its caste composition. A fourth section describes the mathematical procedure used for identifying the community structure in the village. In the sections 4 and 5, results are presented and discussed, and a final section draws some conclusions.

## **2. Caste and community in village India**

“Caste may no longer convey a sense of community that confers civilizational identity to the Indian subcontinent, but it is still the primary form of local identity and, in certain contexts, from Dalits to Brahmans, translates the local into recognizably subcontinental idioms of association far more than any other single category of community.” (Dirks 2001: 5).

Barring recent postcolonial and ‘Indian’ studies, scholarship on caste tells us that local community structures in traditional and modern India are driven by the Hindus’ strict adherence to family- and caste-based collective identities. The latter are underpinned by the ideas and values (ideology) of the caste system. The leading exponent of this view has been Dumont (1980). According to this view, the traditional hold of the caste-based groups on Indian social behaviour has survived all attempts to build alternate identities including the Indian national one (Béteille 1987). Even authors critical of the centrality afforded to collective identities of caste, such as Béteille and Dirks, end up agreeing that caste acts as the central driver of public and private actions of the majority of Indians. The latter however view caste as an evolving phenomenon influenced by colonial knowledge about India generated by British administrators, postcolonial electoral politics, and prominent individuals in Indian society.

## 2.1 Views on caste

Caste exists at two distinct yet partially overlapping levels. The first, *varna*, is the Vedic Hindu term for caste. Simply considered, the varna system divides Hindus (and often South Asian non-Hindus) into four mutually-exclusive and endogamous ranks. Following their ranking from 'high' to 'low', these are: the Brahmans who were traditionally the priests and poets; the Kshatriyas or the warriors including kings; the Vaishya merchants and traders; and finally the Shudra peasants and servants.<sup>2</sup> All varnas were hereditary. The concept of varna, literally meaning colour, is about three thousand years old and can be traced back to the Rig Veda (Srinivas 2002). In Vedic times, the first three varnas were constituted by people of central Asian origin who are believed to be lighter skinned than the indigenous Indians. The Untouchables (or Dalits who were given special status as Scheduled Castes, SCs, by the Indian government) are not included in the varna system (Srinivas 1954).

The second level of caste is *jati*. The hereditary jatis are generally more consistent with local socio-economic characteristics of the caste tradition such as occupational specialization than varnas. Nationally, and often locally in individual villages, jatis are far more numerous than varnas: the Mandal commission set up by the government of India in 1980 identified 3743 jatis among the Hindus alone (Srinivas 2002). As a result, the system of hierarchy or ranking among different jatis is more complex than that of the varnas. Many jatis tend to simplify this by trying to align themselves with one of the four varnas (Deshpande 2001). However, a clear subsumption of jatis under one of the varnas is often not possible, particularly among the non-Brahmans (Srinivas 2002). The ranking among the jatis may be determined locally, at the village or the district level, but wider caste-based political movements and other political alignments in the past have tended to influence this local ranking. Often the local inter-jati hierarchy is influenced by the 'global' inter-varna hierarchy.

During the last century or so, students of the caste system have propounded a number of theories of caste (see Quigley 1994 for an overview). In the following, we focus on the two main theories: first, the Dumontian theory of pan-Indian Varna-based hierarchy with Brahmans at the top and the Dalits at the bottom; and second, the kingship theory that places the kingly Varna of Kshatriyas at the top of the caste pyramid. The latter theory is originally associated with Hocart (1950) and refined in recent decades by Dirks (1987) and Raheja (1988a) among others.

### 2.1.1 Dumont: castes as separate communities

We focus on a set of factors in the caste 'tradition', identified by Dumont (1980), which are believed to drive people in rural India to align their community-affiliation largely along caste lines. These features of the caste system create a separation of castes.

According to Dumont, Indians value the collective identity of caste over individual and national identities because the Indian social world is encompassed or 'englobed' by the caste system. Dumont considers India to be a typical traditional society where "the stress is placed on the society as a whole, as collective Man." (1980: 9). At the level of the jati, he considers caste to be "far more than a 'group' in the ordinary sense, the caste is a *state of mind*... This is why the whole should not be seen by starting from the notion of the 'element'." (1980: 34). The whole, or the caste *system*, is believed to be much more than the sum

---

<sup>2</sup> Note that in the remainder of this paper we use the expressions higher and lower castes simply for the sake of consistency and due to lack of availability of suitable alternate expressions. And our focus is on jatis, rather than varnas, in the studied village.

of its elements i.e., the castes (Appadurai 1986). Along these lines then, each separated caste “isolates itself by submission to the whole, like an arm which does not wish to marry its cells to the stomach.” (Dumont 1980: 41). Furthermore, the separation of castes or their isolation from each other is driven by *ideology of hierarchy* and its concomitant – the fundamental opposition between the pure and the impure.

In Dumont’s theory, the ritual or religious sphere of Indian society encompasses the ‘secular’ political and economic spheres. The ultimate primacy of explanation of Indian (Hindu) social life is to be found in the ‘superior’ intellectual realm of ideas and values underlying Hinduism, or the ideology of hierarchy. Thus, in Dumont’s view, religious ideology subordinates (“overrides and encompasses”) the observed social reality of caste (as community or domination) in India (Madan 2006). As Brahmins are the priestly Varna responsible for carrying out rituals, interpreting religious texts and controlling the temples, they occupy the highest place in Dumont’s pecking order of castes. A second related facet of Dumont’s theory – the ideological and ritual opposition between purity and pollution – lends further credence to his model of Brahminical hierarchy. He uses rituals and customs around commensality, endogamy, occupations, and socio-economic transactions to show that Brahmins are the purest, and thus most careful about not getting polluted through undesired contact with other castes.

The structural opposition between purity and pollution translates into prescribed and proscribed food practices of people, including intra-caste commensality; restricted access to the village temple and the village well; residential location in the village; occupational specialization; caste councils; and endogamy. We discuss these briefly.

To begin with, a vegetarian diet is considered *superior* to a meat diet (by Brahmins) – “a mark of purity opposed to a mark of impurity. ... distinction of purity is the foundation of status.” (Dumont 1980: 56). A second food practice that drives the separation of castes is related to eating of cooked food. Many Brahmin jatis, for example, eat food cooked by members of their own *jati* only. More generally, higher-ranked castes do not accept cooked food from members of lower castes. Second, access to Hindu temples and the village well is forbidden (or restricted) for members of the lower castes. The houses of Dalit and other low-castes are often located in separate hamlets, at a short distance from the main village where the upper-caste houses are located (Dumont 1980: 134).<sup>3</sup> This geographical distance and exclusion from the central village institutions such as the temple and the well are, according to Dumont, part of the ideological hierarchy of purity. And status driven by the ideology of purity is important for upper *and* lower castes. In Dumont’s (1980: 136) words, “preoccupation with status is still present at the lowest level.” If we assume that Dumont is right, then the lower castes *wilfully* form separate communities according to their status (to dissociate themselves from those below them).<sup>4</sup>

Third, occupational specialization plays a role in separating castes. The more specialist professions such as sweepers, washermen, barbers, carpenters, and potters are generally caste-based and their local groups tend to show “strict professional solidarity.” (Dumont 1980: 97).<sup>5</sup> These caste-based professional communities also

---

<sup>3</sup> Residential segregation is still common and was observed by one of us during fieldwork in Andhra Pradesh. In neighbouring Tamil Nadu, the upper and lower caste hamlets are known by different names: *ur* and *veri* respectively (Viramma 2002 [1997]).

<sup>4</sup> As we will discuss later, political assertion and struggle against discrimination by the lower castes may also foster the development of a caste-based collective identity.

<sup>5</sup> Here the caste-based professional communities à la Dumont may be compared to communities of practice studied by Lave and Wenger (1991). Just like the latter, the former cultivate and thrive on extensive master-apprentice relationships and learning through cooperation and knowledge-sharing seems to be the norm rather than internal competition.

prevent competition among its members, for example, through the caste-based associations (*sabhas*) and caste councils (*panchayats*).<sup>6</sup> The latter, through their powers of arbitration encourage conciliation, and attempt to “re-establish harmony within the group and maintain the authority of the panchayat.” (Dumont 1980: 180).

The final and probably the most crucial factor in driving the separation of castes and the formation of caste-based communities is endogamy. Marriage is the main institution that connects caste to kinship: in south India, “marriage is central, and the affinal relationships based on it are developed to the point of perfectly counterbalancing blood relationships.” (Dumont 1980: 111). Apart from the function of uniting the members of the same caste in a given territory, endogamy serves the parallel function of separating different castes from each other: “Separation of castes is achieved, firstly, through endogamy. The effects of caste endogamy are, on the one hand, to deny a powerful potential means of forging solidarity among different castes and, on the other hand, to increase solidarity within each caste.” (Srinivas 1955 [2002: 59]).

To sum up, each caste or caste-based group is “characterized on the one hand by certain diacritical distinctions and on the other by syncretic values. The diacritical distinctions ‘define the unity of the segment in terms of differentiation from other segments’, whereas syncretic values ‘define the unity of the segment in terms of internal solidarity’. One caste differs from another in matters of dress, diet and other habits, while within the caste there is consciousness of community.” (Béteille 1970 [1997: 74]). Furthermore, the consciousness of community and internal solidarity is more intense at deeper levels of segmentation such as “a small endogamous unit whose members are the bearers of a homogeneous cultural tradition and are in fact related to each other by ties of kinship and affinity.” (1970 [1997: 75]). Such endogamous caste-based units at the village-level are precisely the focus of our analysis.

### 2.1.2 *Contra-Dumont: gifts, kings and fostering a community*

One central tenet of Dumont’s book is the distinction between (religious) *status* and (secular) *power*. For him, the former is a ritual phenomenon driven by the religious values of purity and pollution underlying the caste system, whereas the latter is concerned with political economy of a territory where power (primarily, in the form of landholdings in rural India) is distributed among different individuals and groups. And Dumont naturally argues that ritual status (of the Brahmans) is superior political-economic power (of the landlords and kings) and this is where the critique from the kingship theorists has been most severe.

An alternate theory of caste hierarchy and community, developed by a group of anthropologists who found that Dumont’s Brahmanical theory did not represent reality in regions or villages studied by them, argues that kings or dominant castes and landlords at the village-level constitute the centre of Indian society (see for example, Parry 1986; Dirks 1987; Raheja 1988a; Quigley 1994). Here unlike Dumont, the political sphere dominated by the kings was not encompassed by the ritual or religious sphere dominated by the Brahmans. The former often encompassed the latter instead (Dirks 1987; 1988a). More generally, in the kingship theory of caste, the political-economic and ritual realms were intertwined and kings derived their dominance from both.

---

<sup>6</sup> Sabhas are caste associations which generally attempt to unite and mobilize members of the same caste in a region or province. They have become political associations in post-colonial India and played a critical role in fostering caste-based identities (Rudolph and Rudolph 1967). The panchayat is a small committee (generally 2-10 members) constituted by a rural community’s elders who primarily have judicial functions of dispute resolution and censuring. It may in addition have “administrative or executive function, and even legislative ones, to the extent that it can modify custom.” (Dumont 1980: 173).

According to the kingship theorists, Dumont failed to see the ritual importance of the royal acts of donating or giving, specifically to Brahmans (Raheja 1988a; 1988b; Dirks 1988a). For Dumont, the king gave to the ritually-superior Brahman to gain spiritual merit and the Brahman only accepted because of his *economic dependence* on the king. The acceptance of a gift did not affect a Brahman's status in Dumontian caste hierarchy as it carried little significance in the ritual realm (see Raheja 1988b). A gift among the Hindus is of course not free of ritual or religious meaning (Parry 1986; Tanabe 2006). "More specifically the gift is held to embody the sins of the donor, whom it rids of evil by transferring the dangerous and demeaning burden of death and impurity to the recipient (Heesterman 1964)." (Parry 1986: 459). In this sense, contrary to Dumont's theory, impurity flows to a Brahman who accepts gifts from a patron. To avoid the impurity, the Brahman must either pass the gift on to someone else, or digest the 'poison' contained in the gift through certain rituals (Raheja 1988a). Then, Brahmans are simply one of the various gift-receiving groups – very similar to the lower-caste Barbers, Washermen, and Drummers in the provision of ritual services to the king (Raheja 1988b: 504).

In her ethnographic study of a north Indian village, Raheja (1988a) observed two main types of prestations. The first was tied to reciprocal exchange 'among one's own people'. The community building effects of prestations are obvious here. The second type of giving is related to the transfer of inauspiciousness to the gift-recipient, similar to the one described by Parry (1986). At the village level, the local little kings or chiefs of the dominant castes give gifts for the welfare of all in the village, but particularly members of their own family and caste (Raheja 1988b). Similar smaller prestations are made by lesser members of the dominant caste as well. Based on these acts of giving and the resulting accretion of ritual status, the dominant caste occupies the central position in a village's social structure, while other castes occupy the periphery (Quigley 1994; Raheja 1988a).

Prestations are of course not limited to only members of the dominant caste in a village. Other castes attempt to follow the same pattern of giving as the dominant caste. Members of many lower castes attach greater importance to the approximation of their own pattern of giving and receiving with that of the dominant caste, than to their rank in the Dumontian (Brahmanical) hierarchy of the caste system (Raheja 1988a: 245). In this way, on the one hand, through emulation by other castes, the dominant castes do not simply act as a core in a village's social structure but also as the village's symbolic core. On the other hand, giving by non-dominant castes allows them to affirm their identity and ritual status in a village. Such affirmation, when accompanied by a parallel rise in economic fortune or political power, can allow a non-dominant caste to challenge the centrality of the dominant caste and if possible, supersede the latter (cf. Mines 2002).<sup>7</sup>

Finally, both Dirks (2001) and Raheja (1988b) have persuasively argued that Dumont's views were a direct continuation of the colonial scholarship on caste, according to which Indian society can be divided into a neat Varna-based hierarchy with Brahmans at the top (Raheja 1988b; Dirks 2001). British scholarship on caste in the early 20<sup>th</sup> century focussed on attributes of atomistic castes rather than political, economic and ritual interdependence between castes in a village/region. Understanding the characteristics of atomistic castes allowed the positioning of an Indian as a collective man, giving the colonial administrator the illusion of knowing the Indian people: "he did not have to differentiate too much among individual Indians – a man

---

<sup>7</sup> A map of the social network of a village can reveal this change in dominance among castes and thus, avoid biasing an interpretation toward primeval inter-caste relations.

was a Brahman, and Brahmans had certain characteristics...” (Cohn 1968: 14-15, quoted in Raheja 1988b). The discussion of interdependence among castes was largely limited to “negative prohibitions and restrictions concerning marriage and commensality.” (Raheja 1988b: 500). This ‘colonial knowledge’ on separation of castes through endogamy and commensality was recreated by Dumont (1980), despite his avowed aims to study the ‘whole’ caste system (Raheja 1988b).

### 2.1.3 *Dialectics of caste identity: community and post-colonial politics*

In the final chapter of *Homo hierarchicus*, eschewing his focus on the unchanging caste tradition, Dumont considers some developments in colonial and post-independence India (of the 1950s). Here, following Indian sociologists G.S. Ghurye and M.N. Srinivas, he points out how, for example, caste associations (*sabhas*) are becoming more widespread and creating a stronger feeling of intra-caste solidarity, accompanied by stiff competition and often conflict between different castes. This is what Dumont (1980: 222) calls “substantialization of caste.” For him, this phenomenon implies a “transition from a fluid, structural universe in which the emphasis is on interdependence and in which there is no privileged level, *to firm units*, to a universe of impenetrable blocks, self-sufficient, essentially identical and in competition with one another, a universe in which caste appears as a collective individual (in the sense we have given to this word), as a substance.” (1980: 222; emphasis added).<sup>8</sup> Thus, *caste identities*, and the existence of castes as independent units, are getting reinforced while at the same time rivalry among different castes is increasing. Our interest in the latter (rivalry) is only due to its influence on the former aspects, related to strengthening of internal community-solidarity within individual castes.

The process of substantialization is supposed to have started during the colonial period and was intensified in post-colonial India. The reasons are related to increased connections of the village to the outside world and greater power in the hands of the people as opposed to the rulers – a consequence of the intrusion of modern fields of politico-economic activity such as multi-party democratic elections and a system of production relations driven by an integrated market (Dumont 1980: 226).<sup>9</sup> Other important aspects of modern Indian politics that have led to the consolidation of caste identity are: a) affirmative action by the Indian state through reservation of a certain percentage of government jobs and places in government-aided educational institutions for the Dalits or Scheduled Castes (SCs);<sup>10</sup> b) the rise of Hindu nationalism of parties such as the Bharatiya Janata Party and Shiv Sena in the 1980s and 90s, who support reinstatement of the caste system’s hierarchical order in Indian society. For a recent review of affirmative action and rise of Hindu nationalism, accompanied with references to the substantialization thesis, see Reddy (2005: 548-554). In the present paper, we do not discuss these aspects any further (it would be superfluous to do so after Reddy’s

---

<sup>8</sup> However, in line with his overarching theory of the caste system, Dumont maintains that substantialization has largely been restricted to the politico-economic domains of caste, leaving the ritual aspects (hierarchy, purity/pollution) underlying the ‘whole’ caste system largely intact. And as the latter encompasses the former, his main thesis regarding the centrality of ideology of hierarchy is unshaken by substantialization trends (cf. Fuller 1996b).

<sup>9</sup> Note that the influence of wider political economic trends on caste in a village is not an exclusively modern phenomenon, although it may have intensified in the modern era. Caste (*jati*) has interacted with local cultural and central monarchical politics as long as it has existed. According to Kothari 1970 [1997: 61], “factionalism and caste cleavages, patterns of alignment and realignment among the various strata, and a continuous striving for social mobility have always been prominent features of the caste system.”

<sup>10</sup> Other state-sponsored classifications based on caste “backwardness” also exist. These castes are classified as Backward Castes (BC) or Other Backward Castes (OBC).

succinct review). Instead we align our discussion of caste, as an evolving phenomenon shaped by interaction with electoral politics, with the two theories introduced earlier – Dumontian separation of castes through ideology of hierarchy, and the kingship-community thesis. Finally, our aim is not to establish the universal or widespread applicability of the substantialization thesis to all castes in India but rather to present an overview of arguments for and against substantialization.

‘Modern’ electoral politics uses ‘traditional’ caste structures to stabilize itself, legitimising the actions of its leaders and mobilizing the masses with the aid of caste identities and loyalties (Rudolph and Rudolph 1967; Béteille 1970 [1997]; Kothari 1970 [1997]; Kaviraj 1997). In turn, caste gets intimately modified through the influence of electoral politics, often through consolidation of caste identities and internal solidarity, regeneration of caste-based divides, and aggravation of inter-caste conflicts. One of the first sociologists to note the influence of post-independence electoral politics on caste was Srinivas (1957). He argued that electoral politics created a genuine democratization of Indian society and power was passed from the rulers to the people. However, this new political power had to seep through pre-existing power divides in Indian society, largely in the form of caste-based and religious differences. For example, most political leaders in the post-independence decades came from locally dominant castes in rural areas (Kothari 1970). As locally dominant castes were different in different villages/towns, the leaders did not all belong to a single caste. To widen their political base at the provincial or national levels, each leader inevitably appealed to fellow-caste members living in other villages/towns for support and mobilization by exploiting communication channels provided by caste associations (see Rudolph and Rudolph 1967). In the post-election period, the distribution of resources by an elected government was then biased by caste, which often created rivalries among different dominant castes (see Srinivas 1957 for an example in Andhra Pradesh – the famous rivalry between the two landowner castes of Kamma and Reddy). This created the so-called substantialization of caste. Note that the resulting reinforcement of caste identity was not strictly village-based but dispersed across larger provincial and national regions.

The process of substantialization had proceeded so far in the Indian society by the 1990s that individual castes often claim to possess a distinctive culture and ‘way of life’ (Fuller 1996b). According to Fuller, the substantialist move at the same time produces a weakening of the hierarchical aspects of the caste system. As a result of the weakening hierarchy, the caste system becomes an horizontal array of consolidated castes. Similarly, substantialization is viewed as something secular, largely confined to the politico-economic domains, which in fact leads to a weakening of the ritual aspects of the caste system (Kothari 1970).<sup>11</sup> Reviewing the trends in the two decades preceding 1970, Kothari emphasizes that electoral politics is causing secularisation of caste (or promoting the secular elements of caste to become dominant relative to the ritual hierarchical elements) and predicts that it will continue to do so in the future. However, writing today after having witnessed the meteoric rise of the Hindu nationalists in the 1980s and 90s, and their politics built on accentuation of religious and caste divides, one can easily dismiss the secularisation trend predicted by Kothari. In fact, one may now argue that the ritual (religious) elements of caste underwent a resurgence in the last decades of the 20<sup>th</sup> century leading to a ‘communalisation’ of the political arena. The latter in turn fed

---

<sup>11</sup> In our view, the dissolution of vertical relations of the caste system, and the separation of the ritual from the politico-economic, appears to be an overly neat simplification of dynamics of caste-based domination: evidence from India continues to correlate socio-economic disenfranchisement with membership of lower castes (see for example, Deshpande 2000; 2001; Kijima 2006).

back into the caste system, strengthening both intra-caste solidarity and inter-caste cleavages. Here, “the symbols of hindu identity are transmuted into new symbols of caste identity.” (Fuller 1996b: 25, also see Reddy 2005).

Thus, the shaping of substantialization by electoral politics is a complex process ridden with *internal contradictions* and *countervailing pressures*. The former arise, for example, as socio-economic inequality increases within the same caste group (or when a few members of a caste become politically mobilized to support a given party and the rest do not, see Somjee 1973). This internal heterogeneity may act as a hindrance to the fostering of internal solidarity within a caste as people may choose to form friendships with others of their own socio-economic class or political faction (Béteille 1970; Somjee 1973). On the other hand, the rise of a few members of a caste to prominence, in terms of wealth or political power, may provide them with resources to mobilize the entire caste to act in a unified fashion, thus promoting caste solidarity and strengthening of a corresponding collective identity (Reiniche 1996). This leadership-constituency aspect of caste politics is discussed in more detail later.

The countervailing pressures against substantialization are related to movements toward greater inter-caste cohesiveness created by electoral politics. The latter process may for example occur when a caste association, after being in existence and bargaining with political parties for some time, decides to expand its membership base beyond the original caste or jati, to become Varna-based. In this way, the new bigger federation gains more bargaining power than before, often becoming a distinct political group or even a movement (Kothari 1970). Examples of such Varna-based movements are the non-Brahman movement in Tamil Nadu or the Kshatriya movement in AP. However, such movements may not necessarily involve a dilution of underlying caste (jati) identities which may in fact be complementary to the Varna-based identity.

Inter-caste cohesiveness may also be produced through the formation of political constituencies around charismatic leaders. These political groupings bridge caste divides by bringing people under the umbrella of an identity defined, and a community fostered, by the political party of a leader. Such leaders and their constituencies are not restricted to the political sphere alone, constituencies of religious ‘big men’ (head priests and controllers of temple charities) or economic leaders (who also control temples as ‘trustees’ or by heading festival processions) have been observed (Mines and Gourishankar 1990; de Neve 2000). The political strategies used by the religious and economic leaders, such as the distribution of largesse or honours, to maintain and expand their constituencies are quite similar to those used by the political party leaders. Thus, political authority is often intertwined with economic power and ritual control (Schnepel 1995; Reiniche 1996; de Neve 2000). Here, the role of individuality in Indian society, instead of the Dumontian collective man, comes to the fore (Mines and Gourishankar 1990; Mines 1994). This work on individual leadership is very much in line with the kingship theory of caste discussed in §2.1.<sup>12</sup> The multi-caste constituencies of ‘big men’, and the sense of community they foster (de Neve 2000), may be viewed as analogues of peripheral communities around central kings or dominant castes at the village-level as observed by Raheja (1988a). The acts of giving by ‘big men’ may also be viewed as analogous to the royal acts of ritualized giving in the kingship theory as “productive of social solidarity.” (Dirks 1988b: 11). Finally, the ‘big men’ produce internal

---

<sup>12</sup> In a similar vein, studying the political discourse in the last quarter of the 20<sup>th</sup> century, Price (2005) notes that monarchical attributes are often attached to political leaders in south India. However, she does not claim that modern political rule directly follows the structure of its pre-colonial monarchical antecedents. But rather, she points to the continuity in twin aspects of honour and respect as determinants of a ruler’s status in pre-colonial and in post-colonial times.

solidarity in their community/constituency by acting as their group's representatives to negotiate with outside governmental and non-governmental agencies, and social groups.

However, constituencies around charismatic leaders and resulting community composition may not always be multi-caste. For example, Roy (1997) has noted that among the Sourashtras in Madurai, the membership of the community of "upwardly mobile artisan-capitalists" is largely restricted to members of a single caste (de Neve 2000: 502). Similarly, political-economic 'big men' of the Mudaliyar caste in of Tiruchengodu (a town in the Salem district of Tamil Nadu), studied by Reiniche (1996), received strong support from members of their own caste. In Tiruchengodu, intra-caste solidarity and combined power of the caste-based community ensured that certain elected positions, such as the chairman of the municipal council, always remained in the hands of the Mudaliyars (Reiniche 1996). Mines and Gourishankar (1990: 781) also note that strategies of, and institutions around, a local 'big man' in Chennai are geared toward appealing primarily to members of his own Beerī Chettiar caste. More generally, the inner circle of many leaders' constituencies may be largely restricted to members of their own castes (such as the Smartha Brahmans who formed the original inner circle of the Kanchi Shankaracharya's constituency in south India), whereas the outer peripheral constituency may be multi-caste. Thus individuality as leadership, and individual choice in following a particular leader, may operate within the framework of castes. And the leader (political and religious) may give special favours, such as facilitation in finding jobs or admissions to prestigious educational institutions, to members of his inner circle in recognition of their loyalty and services. These favours and other benefits, material (in the form of gold and clothes) and non-material (the status of being closely associated with a prominent leader), act as important incentives for people to join a leader's inner circle.

Now, we must ascertain how the largely non-local (regional, national) process of substantialization, discussed in the foregoing, influences caste identity and community at the village level. People in villages often use their awareness of, and ties to, national and regional political (and/or religious) movements in their local struggles for greater recognition, dignity and power (Somjee 1973; Mines 2002).<sup>13</sup> In fact, the national and regional politics are integrated in everyday life within the village to such an extent that the non-local becomes the local. This is evident in the struggles for equality waged by Pallars (Dalits) in the Tamil village studied by Mines. In the first instance, this struggle took the form of the Pallars' refusal to attend the temple festival headed by the dominant landowning castes of the village and in which the Dalits played a peripheral role (such boycotts of ritual events by Dalits in south India have also been noted by Dirks 1988b, and Fuller 1992, cited in Mines 2002: 68). Secondly, the struggle took an openly subversive stance through the organization of a Pallar temple festival in which the dominant villagers were exposed to the Pallar "vision of a different, egalitarian future." (Mines 2002: 69). This assertion by the Pallars had several features including "a bold procession route, displays of wealth and largess, taking over a road, and using portraits of Ambedkar, a national Untouchable hero and leader, to define an alternative, extravillage source of identity and power." (Mines 2002: 69). Rituals were originally viewed by anthropologists as affirmations of the dominant social order, which reproduced hierarchical social relations of the caste system (Dirks 1988b). But as demonstrated by Mines (2002) and Dirks (1988b), ritual festivals in south India are sites of conflict, contestation and

---

<sup>13</sup> To political movements, one may add the changing nature of rural development programmes in the 1980s and 90s. In order to reach the dispossessed in rural communities, local non-governmental organizations (NGOs) often funded by European donor NGOs have begun to target their programmes toward certain development constituencies such as 'marginal farmers' and 'landless labourers' (Mosse 1999). Participation in these development constituencies has allowed the lower castes to "challenge dominant caste privileges and re-position themselves within local village society." (Mosse 1999: 87).

subversion of caste hierarchies. These “assertions of identity” (Owens 2000: 704) in recent struggles for equality/dignity by the lower castes may be viewed as constitutive of caste-based communities, among both lower castes and upper castes: “Each new consolidation of identity, in other words, by its very oppositional nature spurs its Others toward consolidation,” (Reddy 2005: 554),<sup>14</sup> irrespective of whether or not the Others are “explicitly identified or challenged” (Owens 2000: 704).

In addition, there may be other developments at the village level, for example in the wake of a new legislation, that may foster consolidation of caste-based identity. Here we briefly consider the effects of Gram Panchayats (GPs), or village councils, which were made mandatory in all villages in Indian with the 73<sup>rd</sup> amendment to the constitution in 1992-3 (Johnson 2003; Tanabe 2007; also see Kohli 2007). The GP members are elected to five year terms and GP composition is aimed at providing representation to all castes living in a village according to their local population.<sup>15</sup> Thus caste differences are mobilised at the local level in electing the multi-caste panchayats, despite the government’s aim to diminish caste differences by bringing decentralised democratic rule to the people:

“The villagers consider caste differences employed in the political representation scheme not as something negative to be annihilated through development of democracy but, rather, as the basis for providing fairer entitlement and enfranchisement for different groups.” (Tanabe 2007: 568).

Tanabe (2007) argues that new types of socio-political relationships between castes are emerging as a result of local democratic participation: equality between castes is emphasized over domination and hierarchy by the villagers (cf. Fuller 1996b). Thus, Tanabe echoes Fuller in maintaining that caste *differences* are not getting weakened due to the inroads made by local democracy even if caste hierarchy is. Thus, a caste-based representation in local elected government may create consolidation of caste identity rather than weaken the latter.

Multi-caste decentralized democratic rule in villages, in combination with self-assertion for equality/dignity by the lower castes, may be changing the local economic structures. A GP is responsible for disbursing development funds received from the government, which hitherto landed in the hands of dominant caste leaders who used them for the advancement of their own caste brothers. Now however, a multi-caste GP and struggle for equality by the lower castes makes such a biased disbursement harder. Thus a new form of cooperation must be sought among the different castes (at least among the different caste representatives who are members of the GP) in order to use the development funds for the benefit of the village as a whole. Here then the leaders of each caste group bridge caste divides to negotiate with other castes for making decisions to improve welfare at the overall village level (Tanabe 2007).

To summarize, we have outlined three theories of caste in this section 2. The first Dumontian theory of separated castes equates caste to community. Here the separation of castes is driven by the Brahmanical hierarchy undergirded by principles of purity and pollution. The second contra-Dumont kingship theory emphasizes the centrality of kings and dominant castes in Indian society: ritual giving by kings provides the glue that holds a (caste-based) community together by transferring inauspiciousness to gift-recipients from

---

<sup>14</sup> An illustrative example of such counter-organization by the upper castes in a north Indian village is provided by Jeffrey et al. (2008). Apart from appropriating national and regional developments such as the rise of Hindu nationalist parties that support the reinstatement of the caste system’s hierarchical order (Mines 2005: 201-208), the upper castes may be locally “well-equipped – economically, socially and culturally – to counterresist lower-caste political assertion.” (Jeffrey et al. 2008: 1382).

<sup>15</sup> In addition, a third of all seats are reserved for women. And similar elections are to be held at sub-district (block) and district level representatives (Johnson 2003).

other lower castes and ensuring community welfare. And the third theory, which may be considered as an extension of the second, argues that ritually and politically powerful individuals acting as leaders attract a community of followers around them. This community may be single- or multi-caste.

### 3. The village, its inhabitants, and their social network

The village, Ananthagudem (a pseudonym), of approximately 900 inhabitants is located in the Khammam district of Andhra Pradesh. Out of a total of 212 households, 155 are cultivating farmers. 141 of the 155 farming households own some land, and 14 cultivated land leased from others (a few farmers with small landholding also lease land, see Table 3.1 for distribution of landholdings in the village). An overwhelming 86% of the farmers are smallholders who own less than or equal to 2 hectares of land. In addition to the farmers, the village is inhabited by 38 landless farm-labourers whose primary income is derived from agriculture. The remaining households are engaged in non-agricultural professions such as small shop-owners in the village and construction work in a nearby town. A small number of farmers also own shops for supplementary income, or drive auto-rickshaw taxis in the area. The village is located 6 km from the nearest town and the closest industrial establishment is a thermal power plant where two villagers are employed. The main source of income in the village continues to be agriculture which provides employment for approximately 90% of its population.

**Table 3.1 Distribution of land holdings (owned) in the village**

Size of landholding	Number of Owners	Size of landholding	Number of Owners
≤ 1 hectare	71	> 3 and ≤ 4 ha	8
> 1 and ≤ 2 ha	50	> 4 and ≤ 6 ha	2
> 2 and ≤ 3 ha	7	> 6 and ≤ 8 ha	3
Total number of farmers		141	

Ananthagudem has 10 caste groups. We have caste information for 210 out of a total 212 households (see Table 3.2). The two households, whose caste is not known, operate small shops in the village and do not own any land. The largest group of people in Ananthagudem belong to the Hinduized *Koya* tribe (75 households). A comparable group in size is that of the peasant caste, *Yadava* (62 households). The third and fourth largest groups are the *Lambadi* and the *Dalit Mala* respectively. No single social group dominated clearly in numbers: the difference between the two largest groups is only 13. Neither was there a domination of one group in economic power as measured by total land area: the *Koya*'s collectively own 61.8 hectares and the *Yadava*'s own 62 (as shown in the third column of Table 3.2, 1 hectare is 2.47 acres). Although the amount of land owned per household is different for each caste, the caste-based differences are not substantial (this may be different from many other parts of rural India where caste continues to play a role in determining landownership and some 'traditional' landowning castes still control large parcels of land, Singh 2008). For

Ananthagudem, therefore we can conclude that it does not have a single *dominant caste*, using Srinivas' (1955) criteria.<sup>16</sup>

**Table 3.2 Caste and land distribution in Ananthagudem**

Caste	Number of households	Total land owned (ha)	Average per household (ha)
Koya	75	61.8	0.82
Yadava	62	62	1.00
Lambadi	29	21.4	0.74
Mala (Dalit)	14	19	1.36
Mudiraj	10	20.2	2.02
Potter/Carpenter	7	5	0.71
Goud	5	3.2	0.64
Dudekula	4	2.4	0.6
Choudhary	3	1.2	0.4
Reddy	1	0	0
<b>Total</b>	210	199.4	0.94

### 3.1 Network data

Quantitative data on the social (friendship) networks of the villagers at the level of individual households, and on some other socio-economic variables such as landownership, were gathered during several trips to the village between September 2005 and April 2006. In addition to interviews with the villagers, actors from outside the village were interviewed. These included the shopkeepers who supply farm-inputs and credit to the villagers, and representatives of non-profit organizations who had direct contact with the farmers. As our data map networks at the household level, it is not sensitive to gender differences within individual families. In most cases, the data capture social ties of the male head of each household. So the data are susceptible to a gender-bias critique.

We focussed on close friendship relations of the villagers due to three reasons. First, network data collected through individual surveys and direct observation on close (strong) ties are generally believed to be of better quality than those on weak ties (Marsden 1990). Second, according the literature on social capital in development (for example, Woolcock 1998; Szreter 2002), social capital is traditionally associated with close social ties characterized by mutual respect, trust, and long-term obligations. Third, during initial exploratory trips to the village, most farmers claimed the whole village as their friends and relatives. However, after repeated meetings over several months, many of them revealed that they had close social contact with only a few friends and relatives. In addition, it was gradually learnt that closely related households celebrated important festivals together and helped each other in times of need. At the same time, socio-political support was often mobilized through close social ties.

---

<sup>16</sup> We only use the amount of land owned and numerical strength in the village as measures of economic power to identify the dominant caste in Ananthagudem, as defined by Srinivas (1955). Other more ambiguous measures such as the availability of irrigation (most land in Ananthagudem is either rain-fed or bore-well irrigated) and type of house (concrete-slab roof house versus a thatched hut) can be used as well. However, using these measures does not change the gist of the argument here that there is no dominant caste in Ananthagudem. This fact was confirmed in interviews with the villagers. Nearly everyone maintained that there is no caste divide, or oppression, in Ananthagudem.

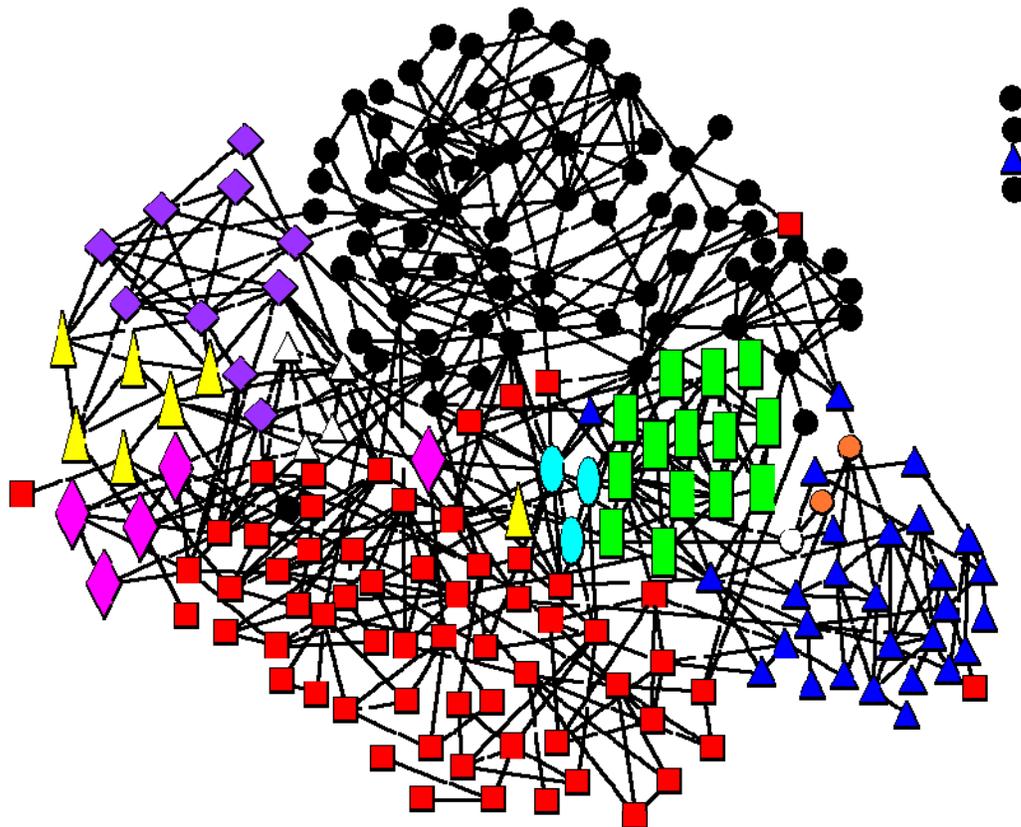


Figure 3.1 Caste-based distribution in Ananthagudem's social network. Only the inhabitants of the village are shown. Data on connections of the four people, depicted as isolates in the top right-hand corner of the Figure were not available.

**Table 3.3 Shapes used to represent the castes in Figure 3.1**

Caste	Shape	Caste	Shape
Koya	<i>Round</i>	Potter/Carpenter	<i>Triangle (long)</i>
Yadava	<i>Square box</i>	Goud	<i>Diamond (long)</i>
Lambadi	<i>Triangle (small)</i>	Dudekula	<i>Triangle (unfilled)</i>
Mala (Dalit)	<i>Rectangle</i>	Choudhary	<i>Ellipse</i>
Mudiraj	<i>Diamond</i>	Reddy	<i>Round</i>

Instead of collecting friendship network data using a survey instrument,<sup>17</sup> we eventually used an inhabitant of the village as a source. Our data on the social ties of some villagers were cross-checked through direct observation by one of us during several trips to the village over 8 months. In his review of empirical

<sup>17</sup> A number of problems in using surveys for collecting network data with self-reports by respondents have been identified (see Marsden 1990 for a review). The problems with survey data are believed to be most severe for social support or friendship networks. In general, network data obtained through direct observations of the type practised by anthropologists are considered more accurate, which “have the advantage of increased naturalness and may yield greater descriptive accuracy” (Marsden 1990: 444-445).

studies on social networks, Marsden (1990) points out that researchers have routinely used a variety of sources in collecting network data including the approach used here: sourcing data from an informant.

Our sourceperson for the data is a local NGO representative who had already lived in the village and worked with all farmers for three years when this fieldwork was begun. She possessed extensive knowledge about the farmers' social affinity networks. Social affinity or friendship was identified on three criteria: the two friends inter-dine, they freely provide (small) help to each other in times of need, and they celebrate (at least some of the) local festivals together. Note that two friends could be, and often indeed are, kin. In addition, the NGO representative was asked to make sure that any two friends identified by her should be *close* to each other (the Telugu word used for close was *daghr*). It was implied that two *daghr* friends, connected as a dyad of the mapped network, will not in general act against each other's interests.

The social network of the village is shown in Figure 3.1. Different shapes used to represent the different castes are listed in Table 3.3.

Some basic descriptive statistics of the network are shown in Table 3.4. The statistics of the network generally fall in the range of the statistics for other commonly studied social networks. Interestingly, Ananthagudem's social network is (slightly) disassortative i.e., individuals with few links are likely to be connected to counterparts with many connections, while individuals rich in social ties are likely to be connected with individuals with fewer links than with individuals with many links (even after correction for the respective shares of individuals with different degrees). Since the number of social ties often reflects the social status of an individual, negative assortative mixing coefficient may indicate the prevalence of 'patron-client' or 'leadership-constituency' like relationships in the social network.

**Table 3.4 Basic statistics for Ananthagudem's social network and other published social networks**

Network	Type	$n$	$m$	$z$	$l$	$C$	$r$
<b>Ananthagudem</b>	<b>undirected</b>	<b>212</b>	<b>498</b>	<b>4.79</b>	<b>4.53</b>	<b>0.29</b>	<b>-0.032</b>
film actors	undirected	449913	25516482	113.43	3.48	0.20	0.208
company directors	undirected	7673	55392	14.44	4.60	0.59	0.276
math coauthorship	undirected	253339	496489	3.92	7.57	0.15	0.120
physics coauthorship	undirected	52909	245300	9.27	6.19	0.45	0.363
biology coauthorship	undirected	1520251	1180364	15.53	4.92	0.09	0.127
email messages	directed	59912	86300	1.44	4.95		
email address books	directed	16881	57029	3.38	5.22	0.17	0.092
student relationships	undirected	573	477	1.66	16.01	0.01	-0.029
Zachary karate club*	undirected	34	78	4.59	2.38	0.24	-0.475

*Basic network statistics are: the total number of nodes ( $n$ ), number of links ( $m$ ), mean degree ( $z$ ), average distance in the largest connected component ( $l$ ), transitivity (clustering coefficient) ( $C$ ), assortative mixing coefficient ( $r$ ). Source: Newman (2003)*

*\*Our calculations using network data from Mark Newman's webpage at <http://www-personal.umich.edu/~mejn/netdata/>*

### 3.2 Castes in Ananthagudem

The Koyas are Telugu-speaking tribal people,<sup>18</sup> believed to have originated in Madhya Pradesh. In the past, Koyas used to speak the dialect of the larger Gond tribe. In fact, the Koyas are sometimes considered a section of the Gond tribe (von Fürer-Haimendorf 1982). They form the largest tribal group in Khammam

<sup>18</sup> The Koya have a Scheduled Tribe (ST) status from the AP government, similar to the status of the SCs. A fixed percentage of government jobs and seats in education institutions are reserved for members of the ST's.

district where Ananthagudem is located. According to von Fürer-Haimendorf, they had lost much of their fertile land to non-tribals in Khammam and neighbouring districts of Warangal and West Godavari. In the last decade or so, the Koyas are engaged in a social movement to repossess this land (see Parthasarthy 2002 for a brief account of this movement in areas north of the Godavari River). The Koyas underwent the most intensive 'detrribalization' among all the Gond tribes in AP (von Fürer-Haimendorf 1982; Arnold 1982). This detrribalization often goes hand in hand with induction into the Hindu caste system, particularly for tribes engaged in agriculture such as the koyas, because "the productive roles of agricultural society were so firmly embedded in caste practices, that before the development of a substantial non-agrarian economy, it was impossible to break free of its economic logic." (Kaviraj 1997: 6).<sup>19</sup>

The second most populous caste in Ananthagudem is the peasant caste of Yadava. The Yadavas are also called Gollas in AP and were often shepherds as well as cultivators (Srinivasulu 2002). Like many other south Indian caste groups, the Yadavas prefer to marry within their village or within the nearby region. They are classified as Other Backward Castes (OBC) by the government since 1961 and have gained some benefit as a result of the caste-based reservation system for jobs and educational opportunities in government institutions (Srinivasulu 2002; Suri 2002). In caste hierarchy and dominance, the Yadavas are generally considered to be ranked lower than the richer peasant (land-owning) castes of Reddy, Kamma and Kapu in AP. Their political clout at the province level is also small as compared to the latter castes. Socio-political movements asserting the Yadava peasant identity, and their equality to the 'upper' caste peasant groups, have however been a prominent feature of north and south Indian politics in the last few decades (with greater success in the north where the Yadavas are more numerous and tend to own larger plots of land). They often side with the richer landowning castes in opposing the right to self-determination by Dalits in many parts of Andhra Pradesh (Suri 2002).

The Lambadi's are the nomadic Banjaras originally from north India, who were the main transporters of grain and salt using herds of pack bullocks in the Mughal era (McAlpin 1974; Varady 1979). The advent of railways and the motorized truck forced the Lambadis to take up permanently-settled agriculture in Andhra Pradesh and elsewhere. In AP, they live in hamlets called Thandas situated on peripheries of existing villages and are listed among the Scheduled Tribes (ST) by the government (Rattord 1984). They generally speak the local Dravidian language Telugu and their own Lambadi language which is closer to the north Indian Hindi. In local caste hierarchy, the Banjaras are generally placed lower than the land-owning Kshatriyas and Brahmans.

The Malas are Dalits (or the former Untouchables) and are traditionally landless labourers and tenants. They have the Scheduled Caste (SC) status and are eligible to benefit from the same type of reservation as the ST's. Just like the Lambadis, the Malas generally live in separate hamlets away from the upper caste villages. They have historically been victims of discrimination, and at times violence, locally at the hands of the landowning castes such as Kamma, Reddy, and Kapu (Srinivasulu 2002). Many Malas from AP, including

---

<sup>19</sup> See section 2.1.1 for a brief account of the occupational specialization associated with one's caste in a multi-caste agrarian society. Along these lines, Kaviraj (1997:6) building on Bose's (1975) work further notes, "that tribal groups who lived in more communitarian and equal social organizations before their amalgamation into Hindu society, had to use some technical productive skill to prise their way into Brahmanical Hindu communities at times of crisis, and could do so only at the expense of accepting a caste identity." And this caste identity was generally quite low in a Varna-based hierarchy. For the Koya specifically, Roth et al. (1983: 266) note, "the Koya now also observe many Hindu religious ceremonies, are essentially monogamous, and exhibit their social solidarity in the judicial authority of the Panchayet, or village headman."

those in Ananthagudem, have converted to Christianity but their membership in the caste system continues largely uninterrupted, just as it does for Christian and Buddhist Dalits in India more generally (Srinivasulu 2002; Fuller 1996b).

The remaining castes together account for 30 households in the village. The largest among them is the group of 10 Mudiraj households. The Mudiraj used to be fisherfolk and soldiers before becoming full-time peasants. In Ananthagudem, they own the largest parcels of land per household (2.02 ha as compared to the village average of 0.94 ha per household). Mudiraj is listed as a backward caste by the AP government (Suri 2002). The next biggest group is that of the potter/carpenter caste. Only two of these households are still occasionally involved in carpentry (they are also cultivators). Farmers of the village generally procured their tools and utensils from a nearby town or city. Most potters/carpenters practised agriculture as a profession, either as farmers or farm-labourers. The Goud, group of 5 households, were toddy tappers and soldiers but many are now cultivators. The Goud form the largest caste-based group in the Telangana region and some Gouds are prominent leaders in AP politics. Like Mudiraj, Goud is classified as a backward caste by the AP government. The Dudekula are the only Muslims in Ananthagudem. They were cotton carders traditionally (Benson 1983). All four households in Ananthagudem are close kin (siblings – three brothers and a sister). Each of the brothers owns some land and cultivates whereas the sister's husband is employed in a nearby town. Dudekula is also treated as a backward caste by the government (Srinivasulu 2002). The last two castes of Ananthagudem, Choudhary or Kamma and Reddy, are traditionally upper-caste landowner castes who employed the Malas (and members of many other lower castes) as labourers. In Ananthagudem, however, they own little land but three of them are successful dairy farmers. Politically, in AP, these are the two most powerful castes which effectively control the two biggest parties of Congress and Telugu Desam.

#### **4. Methods for identifying the community structure**

The literature reviewed in section 2 prompts questions about if and how the caste system gets translated into a 'community structure' at the level of one village i.e., whether the boundary of a subgroup or 'community' is the same as that of a caste. To answer these questions, one needs information about the composition of communities in the village. However, communities as such are not easily observable to a researcher. This obstacle can be overcome by employing data on the network of affinal relationships in the village. Since relationships between members of the same community are more numerous than inter-community links, one can expect that a social network of relationships within the village has some kind of a "modular structure" i.e., it is composed of densely connected clusters of individuals with only sparse connections between the clusters. The purpose of a community structure method is to identify the underlying (unobserved) partition into communities from observed social network data.

##### **4.1 Community structure methods: an overview**

Several methods for decomposing a network into a set of tight-knit subgroups have been developed in the last three decades. In the SNA literature, these techniques are referred to as (*a posteriori*) *blockmodeling* which can be divided into two main categories, deterministic and stochastic blockmodeling.

Deterministic blockmodeling is based on identifying sub-graphs that have properties such as structural equivalence (identical ties to/from other actors), density of internal links (cliques), geodesic distances (clans) and connectivity within a sub-graph (see Wasserman and Faust 1994, ch. 10 on the structural equivalence; ch.

7 on different types of cliques and clans; White et al. 2004 and Moody and White 2003 on connectivity). These deterministic techniques were the first clustering algorithms to be developed in SNA and they are relatively simple to implement. However, they implicitly assume that observed network data are accurate (that there are no missing or misplaced links). They also lack “an explicit theoretical model for the relations between actors,” and therefore have no intrinsic measure for the quality of the partition generated (Anderson et al. 1992: 138). To address these problems, a set of stochastic blockmodeling techniques were developed which assume that an observed network is generated through stochastic processes i.e., each link in the network is attached a probability of its existence. Examples include the methods due to Wasserman and Anderson (1987) and Anderson et al. (1992), who propose a two-step procedure: first, they fit a  $p_1$  model (an exponential random graph model) on an observed network, maximizing the likelihood of realizing the observed network. Then they cluster actors according to the estimated parameters of expansiveness (coefficient of a node’s out-degree) and attractiveness (coefficient of in-degree). A problem with this two-step approach is the high number of parameters to be estimated (twice the number of nodes in a network). This particular problem was addressed by a stochastic blockmodeling method proposed by Snijders and Nowicki (1997; Nowicki and Snijders 2001). In their model, the number of blocks to be identified in a network is first specified. Then the probability of a link between two actors belonging to the same block is greater than the probability if they belong to different blocks. In this way, the number of parameters to be estimated is a function of the number of blocks to be identified rather than the number of nodes in a network.

Even though the stochastic blockmodeling methods provide the advantage of having an intrinsic measure of the quality of a partition (the likelihood function), they suffer from problems of high complexity and the rigidity of fitting an observed network to a pre-defined (stochastic) model. In the former family of models à la Wasserman et al., there is a risk that the model chosen a priori by the researcher (e.g. the  $p_1$  model) may not fit the observed network satisfactorily (Snijders and Nowicki 1997). On the other hand, Snijders and Nowicki’s model may cluster actors with similar degree together. This is because all nodes belonging to the same cluster have equal probabilities of having a link with each other and with other nodes outside their cluster. Thus, the model imposes a limit on the level of asymmetry in degree distribution within a cluster or community. Such asymmetry however may be important to capture if communities are formed around charismatic leaders who have significantly more links than other members of their community.

In recent years, the community detection problem has attracted the attention of physicists and mathematicians working in the interdisciplinary field of ‘network research’. These new developments have the potential of avoiding many of the problems associated with ‘traditional’ blockmodeling methods. These methods have a stochastic bent while being similar to the deterministic blockmodeling methods in their relative simplicity and flexibility (e.g. no restrictive fit to a statistical model is required). The stochasticity is captured through *modularity*, a measure to assess the quality of a partition, which is based on a comparison between observed densities of intra-community links and (expected) densities in a random graph with similar structural characteristics (Girvan and Newman 2002). The aim of an algorithm is then to maximize the modularity value, for which different procedures are now available including general techniques such as simulated annealing (Guimerà and Amaral 2005, Danon et al. 2005), greedy search (Newman 2004), and extremal optimization (Duch and Arenas 2005). In addition, modularity maximization algorithms that explicitly take network structure into account have been developed, such as the Girvan-Newman (2002) partitioning method that works through the sequential removal of edges with the highest betweenness centralities and Newman’s (2006) spectral method used in this paper. Modularity-based methods in general

explicitly allow for asymmetry in degree distribution within communities. For a recent survey of this rapidly growing field of network research, see Fortunato (2009).

## 4.2 The leading eigenvector method for community detection

To detect community structure in Ananthagudem’s social network, we use Newman’s (2006) leading eigenvector algorithm, based on modularity maximization. The literature offers no consensus on which of the many algorithms for modularity maximization provides the best and most reliable results. In the absence of such a benchmark, the leading eigenvector algorithm is appealing because it is relatively fast but accurate and it is well-grounded in the mathematical theory of matrices. We also compared Newman’s (2006) spectral algorithm with two other modularity-based algorithms to determine which method gives us the highest value of modularity i.e., the best partition of the observed network. We found that the spectral method gives higher modularity than Girvan-Newman and Duch-Arenas methods described in section 4.1. Therefore, in the remainder of this paper, we analyse the partition generated using the spectral method.

Here we briefly outline the algorithmic procedure used, for additional details we refer to the original paper (Newman 2006). For the null model, we pick a random graph with the same degree distribution as Ananthagudem’s social network. Now, for any partition of the network, modularity is defined as the difference between the number of edges within identified communities and the ‘expected’ number of such edges (‘expected’ refers to the null model). Thus, the modularity value is a measure of the advantage derived from describing an observed network in terms of communities, as compared to the baseline model of random connections.

First, the network is partitioned into two subgraphs such that this particular partition maximizes the modularity (Newman 2006). To determine which node ends up in which partition, we use the signs of the leading eigenvector of the modularity matrix, each element of which equals the difference between an element of the observed adjacency matrix and the expected value from the null model. Following this, partitioning the network into more than two communities is achieved through sequential application of the algorithm to the two subgraphs, each of which is bisected. If a proposed bisection of a subgraph does not yield a gain in overall modularity value, it is an *indivisible community* and no further divisions of this subgraph should be made. We stop when no divisible subgraph remains. The resulting set of indivisible communities defines a partition with approximately the maximized modularity value.

Newman proposes to complement each step of the above procedure with a ‘fine-tuning’ routine. According to this, after initial separation of nodes into two clusters (and indeed after each subsequent bisection), the following steps should be performed. First, we find a node which if moved to the other cluster would yield the largest gain, or the smallest loss, in modularity. Second, we move such a node to the other cluster. Third, we repeat the first step considering only those vertices which have not been moved yet, from both clusters. Once a move for all vertices has been attempted, we inspect the configurations of possible moves to select only the configuration that provides the largest gain in modularity, and run the procedure from the beginning again until it gives no further improvements in modularity. The end-result of this fine-tuning procedure is a gain in modularity and the modularity value is maximized.

## 5. Results

The algorithm described in the previous section is used to identify indivisible communities in the social network of Ananthagudem. The dendrogram, in Figure 5.1, shows the modularity values on the horizontal axis and cluster numbers (and cluster size in parentheses) on the vertical axis.<sup>20</sup> At early stages of the algorithm's operation, the subdivision of the network into further divisible clusters (communities) produces large gains in modularity. But as the community structure gets finer, the jumps in modularity at each subdivision get smaller. The algorithm stops dividing the social network into ever smaller communities at the threshold modularity value of 0.7243. At this point, we get 14 indivisible communities with sizes ranging from 3 to 25.

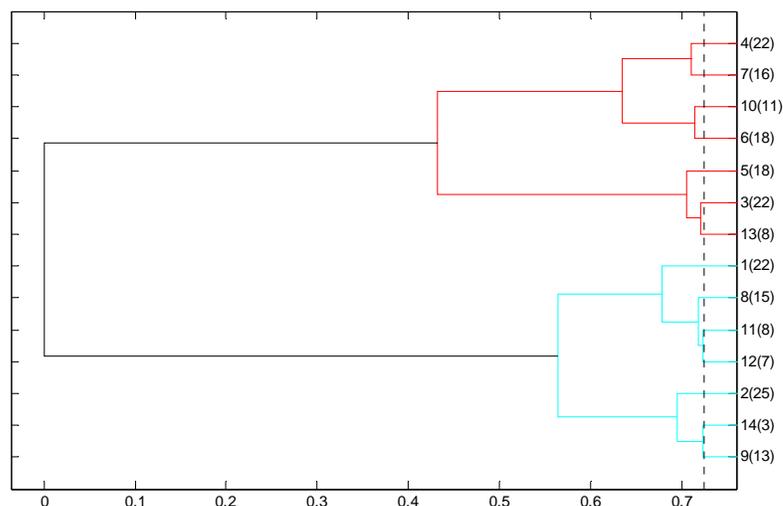


Figure 5.1. Dendrogram for partitioning Ananthagudem's social network by the leading eigenvector algorithm.

Remember that the fine-tuning stage of the procedure optimizes that modularity with respect to alternative bisections of a given community. Once a subgraph is generated (by bisecting its parent), the partitioning between the subgraph and the rest of the network is fixed and none of its nodes can ever be placed in other communities.<sup>21</sup> To circumvent this problem, Sun et al. (2009) have shown that modularity can be improved further if an additional step is introduced where nodes are moved from one community to another or even used as seeds of new clusters. In our case, however, the two-step procedure of Newman appears to produce a reasonable partition, with a relatively high value of modularity. Therefore, we only perform a simple post-algorithm check by inspecting the overall partition results. We make one modification to the final results however by merging the smallest cluster 14 consisting of 3 individuals into the larger cluster 1 with which the former cluster is connected. As a result of this move, the modularity increases to 0.7252.

<sup>20</sup> In the remainder of this paper, we transform the cluster numbers into labels. So cluster number 1 becomes cluster A and so on, until cluster M.

<sup>21</sup> This is a common problem for algorithms based on sequential bisection.

An image of adjacency matrix of Ananthagudem’s social network showing the clusters in different diagonal blocks is shown in Figure 5.2. Note that, as expected, clusters have a high density of internal connections but the number of inter-cluster connections is not negligible.

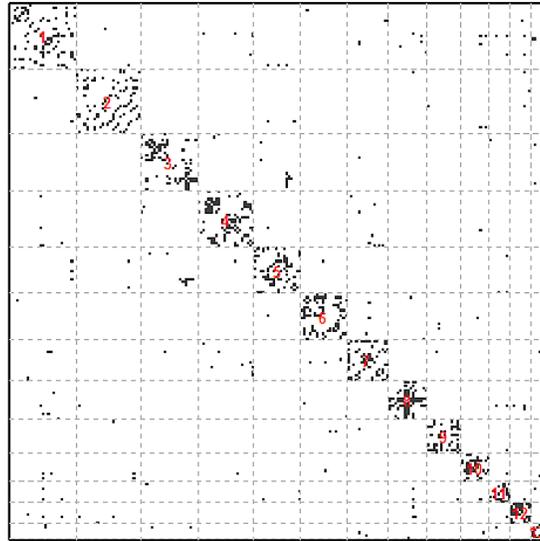


Figure 5.2. The results of partitioning of Ananthagudem’s social network. Clusters shown as diagonal blocks in this image of the adjacency matrix.

The dispersion of a caste across the thirteen identified clusters is shown in Table 5.1. Columns of the Table represent cluster composition and rows show dispersion of castes. Elements in each row of the table sum up to 1.00. Then a value of 1.00 in a single cell denotes that all members of a caste group are present in a single cluster. However, the same cluster contains members of other castes if one or more other cells in that column contain a non-zero value. Thus, as is evident from the results in Table 5.1, in Ananthagudem’s social network, no cluster has the same boundary as a caste group in Ananthagudem.<sup>22</sup> In other words, no cluster contains an entire caste and only that caste. Thus, caste is not *equal* to community in the village.

As shown in Table 5.1, members of the largest caste group, Koya, can be found in all but three clusters. There are three exclusively Koya clusters, C, E and M, containing 31%, 25% and 10% of the Koya population respectively. These are the only single-caste clusters and three of four clusters where the Yadavas are not represented. The fourth non-Yadava cluster is the Mala-dominated cluster H. Thus, members of the Yadava caste, the second largest group in the village, do not form a cluster that is exclusive to them. The Lambadis are present in 5 clusters but are concentrated in two of them: 90% of them are members of clusters B (79%) and L (11%). The other mid-size caste group of Mala’s (with 14 members) join a cluster while remaining intact. In this cluster H, we find only one non-Mala member. Members of the smaller castes of the village (with ten or fewer members) are generally split across two clusters. For instance, the Mudiraj are concentrated in cluster D, but two of them are also members of cluster J. Six of seven Potter caste people in the village are

---

<sup>22</sup> Only one caste, the Mala’s, comes close to having the same boundary as a cluster (H). There is only one non-Mala individual in the 15-member cluster H.

present in cluster D, while the last is in cluster F. Four of five Goud's are in cluster G, which also contains three of four members of the Dudekula caste. Choudhary is the only small caste that is not split across multiple clusters: all of them are present in the biggest cluster A.

**Table 5.1 Dispersion of a caste group across clusters**

Cluster/ Caste	A	B	C	D	E	F	G	H	I	J	K	L	M	Caste size
<i>Koya</i>	0.06	0.01	0.31	0.00	0.25	0.00	0.03	0.00	0.15	0.01	0.08	0.00	0.10	72
<i>Yadava</i>	0.24	0.02	0.00	0.11	0.00	0.27	0.08	0.00	0.02	0.15	0.03	0.08	0.00	62
<i>Lambadi</i>	0.04	0.79	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.11	0.00	28
<i>Mala</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	14
<i>Mudiraj</i>	0.00	0.00	0.00	0.80	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	10
<i>Potter</i>	0.00	0.00	0.00	0.86	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7
<i>Goud</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.20	0.00	0.00	0.00	5
<i>Dudekula</i>	0.00	0.00	0.00	0.25	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	4
<i>Choudhary</i>	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3
<i>Reddy</i>	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1
<i>Unknown</i>	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2
Cluster size	25	25	22	22	18	18	16	15	13	11	8	8	7	

To sum up, we find that members of the largest two castes are dispersed across multiple clusters. The dispersion is less pronounced for the third largest caste group, while the fourth largest caste remains intact. The smaller castes are generally split across two clusters, but the majority of the members of the same (small) caste are located in a single cluster. This dispersion of castes across clusters can be numerically observed by borrowing a measure from the economists' toolkit: the inverse of the Herfindahl index. A Herfindahl index of 1 means that a caste is not dispersed across the clusters i.e., all members of the caste are part of a single cluster. The greater the inverse of the Herfindahl index, the higher the dispersion. In fact, the value of the inverse index gives an indication of how many clusters does a caste get effectively divided into. As shown in Table 5.2, the Yadavas have the highest level of dispersion, followed closely by the Koyas. The Lambadis and small group of Dudekula follow the two large castes in dispersion. Next come the 10-member Mudiraj group and the Goud, which have the same level of dispersion. And as already noted, the 14-strong Mala and the 3-member Choudhary groups show no dispersion at all.

**Table 5.2 The inverse of Herfindahl index: dispersion of caste groups across clusters**

Caste	<i>Koya</i>	<i>Yadava</i>	<i>Lambadi</i>	<i>Mala</i>	<i>Mudiraj</i>	<i>Potter</i>	<i>Goud</i>	<i>Dudekula</i>	<i>Choudhary</i>	<i>Reddy</i>	<i>Unknown</i>
Herfindahl Index	5.00	5.49	1.58	1	1.47	1.32	1.47	1.6	1	1	1

The caste composition of each cluster is shown in Table 5.1. Here elements in each column sum up to 1.00. Clusters A and B are the largest, with 25 people and four castes each. All but three clusters are composed of members of more than one caste. The three single-caste clusters, as already noted, are all Koya clusters C, E, and M. Two other clusters F and H are predominantly single caste, with more than 90% of their population being Yadava and Mala respectively. All other clusters (8) in Ananthagudem can be considered to

be multi-caste, constituted by members of 2-5 different castes. It is however important to note that in all but two of the multi-caste clusters, a single caste provides the majority of members (more than 50% of cluster membership). Members of the Koya caste form a majority in two of the multi-caste clusters (I and K). The second largest caste, Yadava, is (numerically) dominant in 4 clusters, A, F, J and L. The third largest group, Lambadis, form a majority in cluster B. Only in clusters D and G, do we find that no single caste group constitutes a clear majority. These two clusters, sized 22 and 16, are made up of people belonging to 4 and 5 different caste groups in the village respectively.

**Table 5.2 Caste composition of each cluster**

Cluster/Caste	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>K</i>	<i>L</i>	<i>M</i>
<i>Koya</i>	0.16	0.04	1.00	0.00	1.00	0.00	0.13	0.00	0.85	0.09	0.75	0.00	1.00
<i>Yadava</i>	0.60	0.04	0.00	0.32	0.00	0.94	0.31	0.00	0.08	0.82	0.25	0.63	0.00
<i>Lambadi</i>	0.04	0.88	0.00	0.00	0.00	0.00	0.00	0.07	0.08	0.00	0.00	0.38	0.00
<i>Mala</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.00	0.00	0.00	0.00
<i>Mudiraj</i>	0.00	0.00	0.00	0.36	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
<i>Potter</i>	0.00	0.00	0.00	0.27	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Goud</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.09	0.00	0.00	0.00
<i>Dudekula</i>	0.00	0.00	0.00	0.05	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00
<i>Choudbary</i>	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Reddy</i>	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Unknown</i>	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>SIZE</i>	25	25	22	22	18	18	16	15	13	11	8	8	7
<i>No. of castes</i>	4	4	1	4	1	2	5	2	3	3	2	2	1

In the next section, we analyse these results in detail and attempt to understand the drivers of community (cluster) formation in Ananthagudem in terms of the theories of caste discussed in section 2.

## 6. Further Analysis

The above results show that the ‘caste as community’ assertion does not explain social cohesion and tight-knit group formation. Thus our results do not support Dumont’s theory of separated castes reviewed in section 2.1.1. However, the results do indicate that caste plays an important role in determining the community structure in the village. But it is only one of several factors, many of which cannot be subsumed, à la Dumont, under the category of caste community or hierarchy. The ‘non-caste’ factors include family; lineage; neighborhood; class; affinal connections to outside the village; shared occupations and the distribution of ritual and agricultural knowledge/expertise in the village; organizational and technological innovations introduced through rural development (cf. Oommen 1970; Klass 1972; Mosse 1999); and the introduction of political innovations into villages and the political/religious leadership-constituency arguments reviewed in section 2. In line with that review, we restrict our focus largely to discussing whether the (single- and multi-caste) leadership-constituency arguments can help us understand the community structure of Ananthagudem’s social network. The premise is that we can view the clusters in the social network as one form of constituency. Then each single- or multi-caste cluster is home to one or two leaders who are influential within the cluster but also broker with other leaders in representing the interests of their constituency in various village-level (and outside) fora.

## 6.1 Caste, cluster and constituency in Ananthagudem

In village-level fora such as the GP, the interests of large castes, due to their sheer size and internal diversity, are not easily represented by a single caste headman (cf. Oommen 1970). Such numerically strong castes generally include members of different lineages, each of which has its own head. They also have a variety of agriculturalists, ranging from mid-size farmers to the landless. Correspondingly in our results, we observe that the two large castes in Ananthagudem, Yadava and Koya, are distributed across multiple clusters. However, rather than simply splitting into smaller single-caste clusters, the Koyas and Yadavas regularly form community affiliations with people from other castes in the village: in 7 out of 10 clusters for the former and in all 9 clusters for the latter. Surely there are factors other than caste which drive the community affiliation of both Yadavas and Koyas. For example, in the multi-caste clusters G and K, where Yadavas and Koyas are both present, and in clusters B and D, living in the same neighborhood is an important factor in bringing people together. Many people however do not join these clusters individually but along with a few members of their own family or lineage. In fact, the family or lineage effect seems to play a role in almost all clusters. Thus, people tend to be tightly interlinked with members of their family/lineage but, at the same time, form inter-caste friendships in their residential neighborhood.

We do not observe much dispersion among the two mid-size castes in Ananthagudem, Lambadi and Mala with 28 and 14 members respectively. The Mala's join cluster H collectively without splitting. This cluster has only one non-Mala member, who shares the same occupation, auto-rickshaw driver, with at least two Mala men.<sup>23</sup> He also lives in the same neighborhood as the Mala's. Overall, Mala is the only caste group in Ananthagudem which has almost the same boundaries as the cluster it forms and for them, the caste as community assertion comes closest to being true. Major reasons for this community cohesion among the Mala's are, a) almost all Mala's in Ananthagudem belong to a single lineage and share the same family name (even those who don't share the same family name are generally kin); b) they are recipients of specifically-targeted state development programmes that are exclusive to them in Ananthagudem, because of their SC status (one such successful programme being implemented during the time of our fieldwork was mulberry cultivation for silkworms and fruit); c) effective leadership from the caste headman who is an active member of many village-level committees in addition to being an elected member of the GP. We will return to the leadership aspect later.

The 28 Lambadi's are concentrated in two clusters: 22 of them are in cluster B, and 3 are in the small cluster L. In both clusters, they join hands with members of other castes living in their neighborhood (3 individuals in cluster B and 5 in cluster L). Apart from neighborhood, close affiliation with the most active development NGO working in the village seems to be a driving factor in bringing people together. For instance, in cluster L, made up of 8 people belonging to two castes, one of the Lambadi's and one of the Yadava's are important resource persons of the NGO in the village. The former is the headman of the Lambadi caste group in Ananthagudem. Similar close affiliation to the NGO can be observed in the larger cluster B, one of whose members is in fact the only NGO employee resident in the village.

---

<sup>23</sup> Most Ananthagudem residents as we have already noted are agriculturalists. Thus, a minority profession such as auto-rickshaw drivers who ply their rickshaws outside the village can act as an important driver for community formation. The auto-rickshaw drivers need to share information and knowledge about agencies which finance auto-rickshaws, repair workshops, routes on which to ply the rickshaws as mini-buses, auto-component shops, and solving small problems with their machines.

The smaller castes (Mudiraj, Potter/Carpenter, Goud, Dudekula except Choudhary) split up and join two different clusters. Here one or two members do not stick with the rest of their caste group in joining a larger cluster. For example, in the case of the Potter/Carpenter caste, six out of seven members are found in the 22-member cluster D and the last one is part of cluster F. This last person lives in a different part of the village than the other six Potter/Carpenter people. In addition, he is the only Christian among the Potter/Carpenters of Ananthagudem and the pastor of a small church adjacent to his house. In the case of the five Goud's, four individuals residing in the same village neighborhood are together part of cluster G. Three of these four belong to the same extended family. The fifth Goud is a member of cluster J. He is unrelated to the other four Goud's and lives in a different neighborhood. He is one of only two Registered Medical Practitioners (RMPs) in Ananthagudem who treat common ailments of the villagers (and often their cattle). He is a prominent personality in the village (more about him in section 6.2 below).

The only small caste group that does not get split across two clusters is Choudhary. All three members of this caste are present in cluster A. The headman of the Choudhary's, despite their small numerical strength, is arguably the most influential individual in the village. He is an important dairy farmer which is regarded as one of the most profitable occupations by Ananthagudem residents. In addition, he cultivated 13 acres of land (3 owned and 10 leased) in 2005-6. He is a good friend of the main crop-buyer and farm-input supplier to Ananthagudem. He is also a close friend of the GP president, who happens to be a member of the same cluster A. In fact, Cluster A is home to some other prominent people in the village, including the headman of the Yadava's and a GP member (Yadava) who is also a local moneylender. Both of them also work as resource persons for the local NGO. Thus, cluster A is the closest we find to a 'core cluster', or power centre, in Ananthagudem's social network. It also has the highest group (closeness and degree) centrality values of all clusters, as shown in Table 6.1.<sup>24</sup> The multi-caste nature of the core cluster implies that the centre of the Ananthagudem's social structure is not a dominant caste group, as observed by Raheja (1988a) in a north Indian village (see section 2.1.2), but rather a cluster composed of prominent individuals belonging to at least three different castes. However, note that the coreness of cluster A, or its position as the centre of Ananthagudem, is quite weak as a number of other powerful individuals are dispersed across different clusters. Thus, (important) members of the core cluster A cannot independently make decisions for the entire village without consulting other community leaders. These other community leaders each have their own constituency, coterminous with a cluster in the village's social network. And as we already noted, at least 8 of the 13 clusters, and thus constituencies, in Ananthagudem are multi-caste. But are the leaders of these clusters or constituencies predominantly the 'traditional' headmen of each caste group in Ananthagudem?

**Table 6.1 Cluster (group) centrality values**

Cluster	A	B	C	D	E	F	G	H	I	J	K	L	M
Degree centrality	0.14	0.05	0.05	0.08	0.07	0.04	0.08	0.07	0.03	0.04	0.05	0.05	0.04
Closeness centrality	0.41	0.31	0.27	0.33	0.32	0.30	0.31	0.32	0.29	0.31	0.33	0.30	0.29

<sup>24</sup> Group centrality was calculated according to Everett and Borgatti (1999).

## 6.2 The leaders in Ananthagudem

To identify the leaders in each cluster, we combine a measure of influence and decision-making power within a cluster (community) with the ability to negotiate with other communities. The former is measured using an individual's closeness centrality within her/his cluster and the latter using inter-cluster betweenness (the inter-clique betweenness measure developed by Gould 1989). After identifying these leaders, we provide additional information on their socio-economic attributes that place them in a position to act as patrons of their constituency (see section 2.1.3).

For each cluster, individuals with the highest values of the product of the two measures are listed in Table 6.2.<sup>25</sup> In general, these individuals have substantially higher values of the product than the rest of the cluster. We identify one leader per cluster. A complete list of all individuals with non-zero values, i.e. individuals who have at least one link to someone outside their own cluster, is available in Appendix A of this paper.

**Table 6.2 Leaders in each cluster**

Name	Cluster (size, # castes)	Caste	In Cluster Closeness	Inter-cluster betweenness	Product
Gorinta, EG	A (25, 4)	Choudhary	0.429	0.915	0.392
Yarla, FR	B (25, 4)	Lambadi	0.393	0.187	0.073
Palam, HV	C (22, 1)	Koya	0.538	0.272	0.146
Joardar, GX	D (22, 4)	Dudekula	0.512	0.321	0.165
Velu, HO	E (18, 1)	Koya	0.586	0.617	0.361
Datla, BS	F (18, 2)	Yadava	0.680	0.140	0.095
Sapna, FC	G (16, 5)	Koya	0.455	0.474	0.215
Koli, ED	H (15, 2)	Mala	0.778	1.000	0.778
Veena, IE	I (13, 3)	Koya	0.800	0.140	0.112
Pai, DJ	J (11, 3)	Goud	0.476	0.210	0.100
Veena, IG	K (8, 2)	Koya	0.700	0.716	0.501
Yarla, FQ	L (8, 2)	Lambadi	0.467	0.399	0.186
Sapna, EW	M (7, 1)	Koya	0.667	0.256	0.171

The leader of cluster A is the headman of the 3-member Choudhary group in Ananthagudem. As pointed out in section 6.1, his influence in the village is far greater than that reflected by the small size of his caste group. In addition to his local socio-economic power and connections with important people from outside the village, influence from the state-wide clout of the Choudhary caste may be an important factor in buttressing his prominence in Ananthagudem.<sup>26</sup> The leader of cluster B on the other hand does not have a far-reaching influence in the village. Thus, his ability to act as a patron of members of his constituency is not clear. He is however the son of a local moneylender who lends small amounts in the village. In addition, he was actively involved in the developmental work of the local NGO, particularly in relation to sustainable agriculture. Similarly, the potential to act as patrons of their constituencies of the leaders of clusters C and F

<sup>25</sup> Before taking the product, we normalize Gould's inter-clique betweenness by dividing each value by the difference between the global maximum and minimum. All names listed in Table 6.2 are pseudonyms and in the remainder of this paper.

<sup>26</sup> Choudhary is one of two main landowning (upper) castes in Andhra Pradesh and effectively controls the Telugu Desam party which won the state elections in 1994 and 1999, and so ran the state government for ten years until 2004.

is not clear. Cluster C (constituted by Koya's only) is headed by a member of the largest lineage in Ananthagudem, the Palam lineage with 13 households. Cluster F is led by a member of 8-strong Datla lineage. Members of the Palam and Datla lineages, including the leaders of clusters C and F, are among the poorest in Ananthagudem with little or no landholding. According to the information collected during our fieldwork, they are also not well-connected to the local NGO or some other commercial or state actors. So it is difficult to identify 'visible' socio-economic attributes of the leaders, other than their connections within the village's social network, which place them in a position to act as a patron for others in their respective clusters.

The leader of cluster D is the Dudekula caste headman. In addition to being a farmer, he owns a shop in the village. He has friendship ties with a number of other prominent villagers as well as being a close friend of the powerful farm-input and credit supplier to the village. The Koya-only cluster E is led by the head of the 13-member Velu lineage, which along with Palam is the largest lineage in Ananthagudem. The leader of this cluster is the GP secretary and a resource person for the local NGO. Although he owns only 2 acres of land, he leases another 10 which is the largest amount of land leased by anyone in Ananthagudem. These 12 acres then make him one of the largest cultivators in the village.

Cluster G is led by a prominent farmer who doubles as a moneylender in the village. He is also a local official (secretary) for the Village Tribal Development Authority (VTDA). The VTDA generally channels development resources into the village. These (government) funds may be targeted at strengthening local education, health, irrigation infrastructure, and women's savings groups (Jayalakshmi et al. 2003). Cluster H is largely composed of people from the Mala caste and is led by the highly respected Mala headman. This headman is an active member of many village level committees including the GP and a farmers' consultation group. He also acts as a resource person for the local NGO.

Cluster I is headed by a younger brother of the caste headman of the Koyas (the latter himself is a member of cluster K). The leader of cluster I owns the largest amount of land in the Veena lineage and his landholding is the third largest among the Koyas. The Goud RMP, we talked about in section 6.1, leads cluster J. In addition to his medical practice which according to him attracts patients from all castes in the village, he runs a successful dairy business.

The 8-member clusters K and L are led by the headmen of the Koya and Lambadi castes respectively. Note that both clusters include members of the Yadava caste as well, thus the constituency of these two caste headmen is not limited to their own castes. Both headmen are central resource persons for the local NGO. As caste headmen, along with other members of a caste panchayat, they are responsible for settling intra-caste disputes. In addition, they are often asked to help with dispute resolution between members of other castes. The Lambadi headman is also a land-sale administrator in Ananthagudem and an expert, in sustainable agricultural methods, approached by many other farmers for advice. Finally, the smallest cluster M is a Koya-only cluster led by the head of the 11-household Sapna lineage, which is the third largest lineage group in the village. The Sapna leader has the largest landholding in his lineage, which is second only to the GP president among the Ananthagudem Koya as a whole. In addition to being a moneylender in the village, he is also a resource person for the local development NGO who is considered knowledgeable about the new sustainable farming methods introduced by the NGO.

As we have seen above, leadership in a cluster can be associated with any of a number of characteristics ranging from landownership to caste or lineage headmanship to association with a local NGO that acts as a development patron for the village. Constituency of these leaders in each cluster is generally not limited to

members of their own caste. Thus, a strictly caste-based understanding of leadership and constituency does not provide an adequate or complete explanation for community structure in the village. Arguments of multi-caste constituencies and leadership seem to be more valid.

As a summary of the analysis, we applied a community structure algorithm to social network data from a south Indian village to divide the network into tight-knit clusters. None of the clusters had the same boundary as a caste group in the village. A single dominant caste was not found to occupy the central position in the social network or act as a core cluster. Prominent individuals who bridge structural divides of caste and cluster were found to be important persons in the village who represent the interests of their community (multi-caste cluster) in village-level fora.

## 7. Conclusions

In this paper, using social network data from a south Indian village, we evaluated three theories of caste in India. The first Dumontian theory states that separated castes act as de facto communities in rural India. Here any other form of community affiliation or social relationships are viewed as subsidiary to caste system's overarching principle of Brahmanical hierarchy based on purity and pollution. The second theory, contra Dumont, maintains that caste system in village India is best understood in terms of a core-periphery structure. The dominant kingly caste is the core in a village's social structure and acts as patron of sorts for other castes (Brahmans and lower) in the periphery. Ritual gifting by little kings rather than Brahmanical purity is the driving ideological force according to this theoretical schema of the caste system. A third theory, a post-colonial extension of the second theory, emphasizes the role of important individuals in Indian society. Here a community leader may be viewed as a sort of modern-day avatar of the little king and acts as a patron for his/her constituency. The constituency in this case is not restricted to the leader's own caste. The latter can however form a lion's share or the inner circle of a leader's constituency.

Our results lend credence to only the third theory outlined above. The boundaries of communities or clusters are never the same as boundaries of a caste group in Ananthagudem. Nor do we find a dominant caste in the village that acts as a core in its social structure. Large and small caste groups in the village split up to join multi-caste clusters and we find a weak core in the network which is a large multi-caste cluster with a high concentration of important people belonging to different castes. Many members of this core cluster constitute the power elite in Ananthagudem, along with leaders of the other clusters in the network. These leaders' uniqueness is defined by their social ties in the network, within their own clusters and with members of other clusters: "the individuality of persons is recognized within the context of groups where they are known and within which they have a known set of statuses and roles. Contexts include the household, one's kin, and one's caste community, but they may also include neighbourhood, political parties or other institutions, and in the case of important persons, the state or even the nation." (Mines 1994: 21). The 'state' at the village level translates into institutions such as the Gram Panchayat and various rural development organizations. What emerges from this discussion is a case of multiple identities where caste enters as only one important variable in defining loyalties to leaders and community boundaries.

In our discussion, we have focussed on the influence of caste on social relations and leadership at the local level. But we viewed caste itself as a supra-local institution that is exogenously given. In other words, we do not discuss how people at the local-level negotiate the *meaning* of caste in their everyday life and through this process, sustain its relevance (Mines 2002; Tanabe 2006). This continued relevance of caste, on the other

hand, in terms of leadership and community, is clear from the discussion and evidence presented in this paper. Many leaders in the village, identified using network measures are headmen of caste groups and their constituencies contain members of their own caste. However, at the same time being a caste headman alone is not sufficient to secure one's position as a leader in the village. The power of individuals driven by their caste-based ritual or hereditary status co-exists, competes and cooperates, with other forms of prominence in rural India. These other forms of prominence include participation in different organizational and institutional innovations that have been introduced in the last few decades. We looked at two such institutions in Ananthagudem, namely the state-supported Gram Panchayat and NGO-supported rural development organizations, and found that active membership of these institutions is closely associated with leadership of network clusters. Many caste headmen, through active participation in and control of village-level institutions, buttress their caste-derived authority with newer forms of prominence. Being able to control the distribution of state and non-state development benefits allows the leaders to situate themselves as quasi-patrons of their constituencies or communities, but only after negotiating with leaders of other communities who hold similar positions at the village level.

## References

- Anderson, C.J., Wasserman, S., and Faust, K. (1992). Building stochastic blockmodels, *Social Networks* 14, pp. 137-161.
- Appadurai, A. (1986). Is Homo Hierarchicus? *American Ethnologist* 13 (4), pp. 745-61.
- Benson, J.E. (1983). Politics and Muslim Ethnicity in South India. *Journal of Anthropological Research* 39 (1), pp. 42-59.
- Béteille, A. (1970 [1997]). Caste and Political Group Formation in Tamilnad. In R. Kothari (ed.), *Caste in Indian Politics*, New Delhi. Reprinted in S. Kaviraj (ed.) *Politics in India*, Delhi, Oxford University Press, pp. 71-93.
- Béteille, A. (1987). Individualism and the Persistence of Collective Identities. In *The Idea of Natural Inequality and Other Essays*. New Delhi, Oxford University Press, pp. 198-226.
- Béteille, A. (1991). *Society and Politics in India: Essays in a Comparative Perspective*. London: Athlone Press.
- Chatterjee, P. (1993). *The Nation and its Fragments: Colonial and Postcolonial Histories*. Princeton: Princeton University Press.
- Cohn, B.S. (1968). Notes on the history of the study of Indian society and culture. In M. Singer and B.S. Cohn (eds.), *Structure and Change in Indian Society*. Chicago: Aldine, pp. 3-28.
- Danon, L., Diaz-Guilera, A., Duch, J. and Arenas, A. (2005). Comparing community structure identification. *Journal of Statistical Mechanics: Theory and Experiment*, P09008.
- Deshpande, A. (2000). "Does caste still define disparity? A look at inequality in Kerala, India." *American Economic Review* 90 (2), pp. 322-325.
- Deshpande, A. (2001). "Caste at Birth? Redefining disparity in India." *Review of Development Economics*, 5 (1), pp. 130-144.
- Dirks, N. (1987). *The Hollow Crown: Ethnohistory of an Indian Kingdom*. Cambridge and New York: Cambridge University Press.
- Dirks, N. (1988a). The original caste: Power, history and hierarchy in South Asia. CSST Working Paper No. 10, University of Michigan, Ann Arbor.
- Dirks, N. (1988b). Ritual and resistance: Subversion as a social fact. CSST Working Paper No. 16, University of Michigan, Ann Arbor.
- Dirks, N. (2001). *Castes of Mind: Colonialism and the Making of Modern India*. Delhi: Permanent Black.
- Duch, J. and Arenas, A. (2005). Community detection in complex networks using extremal optimization. *Physical Review* 72, 027104.
- Dumont, L. (1980 [1970]). *Homo Hierarchicus: The Caste System and its Implications*. Chicago: University of Chicago Press.

- Dumont, L. and Pocock, D.F. (1957). Village Studies. *Contributions to Indian Sociology* 1, pp. 23-41.
- Everett, M. G. and Borgatti, S. P. (1999). The centrality of groups and classes. *Journal of Mathematical Sociology*, 23(3): 181-201.
- Fordham Norr, K. (1976). Factions and Kinship: The Case of a South Indian Village. *Asian Survey* 16 (12), pp. 1139-1150.
- Fortunato, S. (2009). Community detection in graphs. arXiv:0906.0612v1
- Fuller, C.J. (1992). *The Camphor Flame: Popular Hinduism and Society in India*. Princeton: Princeton University Press.
- Fuller, C.J. (1996a) (ed.). *Caste Today*. SOAS studies on South Asia. New York: Oxford University Press.
- Fuller, C.J. (1996b). Introduction. In C.J. Fuller (ed.), *Caste Today*. New York: Oxford University Press.
- von Fürer-Haimendorf, C. (1982). *Tribes of India: The Struggle for Survival*. Berkeley: University of California Press. <http://ark.cdlib.org/ark:/13030/ft8r29p2r8/>
- Girvan, M. and Newman, M.E.J. (2002). Community structure in social and biological networks, *Proc. Natl. Acad. Sci.* 99(12), pp. 7821-26.
- Gould, R. (1989). Power and Social Structure in Community Elites. *Social Forces* 68 (2): 531-552.
- Guimerà, R. and Amaral, L.A.N. (2005). Functional cartography of complex metabolic networks. *Nature* 433, pp. 895-900.
- Heesterman, J.C. (1964). Brahmin, ritual and renouncer. *Wien. Z. Kunde Süd-Ostasiens* 8, pp. 1-31.
- Hocart, A.M. (1950). *Caste: A Comparative Study*. London: Methuen.
- Inden, R.B. (1990). *Imagining India*. Oxford, UK: Basil Blackwell.
- Jayalakshmi, K., Khorakiwala, T., Reddy, G., Reddy, R., Singh, V., Goetz, A. and Jenkins, R. (2003). State responsiveness to poverty: A comparative study of development interventions in the Indian states of Andhra Pradesh and Madhya Pradesh. Report to DFID, Sussex: Institute of Development Studies.
- Jeffrey, C., Jeffery, P., & Jeffery, R. (2008). Dalit revolution? New politicians in Uttar Pradesh, India. *The Journal of Asian Studies*, 67(4), 1365-1396.
- Johnson, C. (2003). Decentralisation in India: Poverty, politics and Panchayati Raj. Working Paper no. 199. London: Overseas Development Institute.
- Kaviraj, S. (1997). Introduction. In S. Kaviraj ed. *Politics in India*, Delhi: Oxford University Press, pp. 1-36.
- Kijima, Y. (2006). Caste and tribe inequality: Evidence from India, 1983-1999. *Economic Development and Cultural Change*, 54(2), pp. 369-404.
- Klass, M. (1972). Community Structure in West Bengal. *American Anthropologist*, New Series, 74 (3), pp. 601-610.
- Kohli, A. (2007). State and redistributive development in India. Unpublished manuscript, Princeton University.
- Kothari, R. (1970 [1997]). Caste and Modern Politics, in R. Kothari ed. *Caste in Indian Politics*, New Delhi, Orient Longman. Reprinted in S. Kaviraj ed. *Politics in India*, Delhi, Oxford University Press, pp. 57-70.
- Lave, J., and E. Wenger. 1991. *Situated Learning. Legitimate Peripheral Participation*. Cambridge, UK: Cambridge University Press.
- Madan, T.N. (2006). Louis Dumont and the Study of Society in India. In R.S. Khare (ed.), *Caste, Hierarchy and Individualism: Indian Critiques of Louis Dumont's Contributions*, New Delhi: Oxford University Press.
- Marriot, M. (1955) (ed.). *Village India*. Chicago : University of Chicago Press.
- Marriot, M. (1969). Review of Homo Hierarchicus: Essai Sur Le Système Des Castes by Louis Dumont. *American Anthropologist*, New Series 71 (6): 1166-1175.
- Marsden, P.V. 1990. Network Data and Measurement. *Annual Review of Sociology* 16: 435-463.
- McAlpin, M. (1974). Railroads, Prices, and Peasant Rationality: India 1860-1900, *The Journal of Economic History* 34 (3), pp. 662-684.
- Mines, D.P. (2002). Hindu nationalism, Untouchable reform, and the ritual production of a South Indian village. *American Ethnologist* 29 (1), pp. 58-85.
- Mines, D.P. (2005). *Fierce gods: Inequality, ritual, and the politics of dignity in a south Indian village*. Bloomington: Indiana University Press.

- Mines, M. (1994). *Public Faces, Private Lives: Community and Individuality in South India*. Berkeley: University of California Press.
- Mines, M., and Gourishankar, V. (1990). Leadership and Individuality in South Asia: The Case of the South Indian Big-man. *Journal of Asian Studies* 49 (4), pp. 761-786.
- Moody, J., and White, D. R. (2003) Social Cohesion and Embeddedness: A Hierarchical Conception of Social Groups. *American Sociological Review* 8(1), pp.1-25.
- Mosse, D. (1999). Responding to Subordination: The Politics of Identity Change Among South Indian Untouchable Castes, in J.R Campbell and A. Rew (eds.), *Identity and Affect: Experiences of Identity in a Globalising World*, London: Pluto Press, pp. 64-104.
- de Neve, G. (2000). Patronage and 'Community': The Role of a Tamil 'Village' Festival in the Integration of a Town. *Journal of the Royal Anthropology Institute* 6 (3), pp. 501-519.
- Newman, M. E. J. (2003) "The Structure and Function of Complex Networks" *SLAM Review* 45(2), pp. 167-256.
- Newman, M.E.J. (2004). Fast algorithm for detecting community structure in networks. *Phys. Rev. E* 69, 066133.
- Newman, M.E.J. (2006) Finding community structure in networks using the eigenvectors of matrices, *Physical Review E* 74(3): 036104.
- Nowicki, K. and Snijders, T.A.B (2001). Estimation and prediction for stochastic blockstructures. *Journal of the American Statistical Association* 96, pp. 1077-1087.
- Oommen, T.K. (1970). Rural Community Power Structure in India. *Social Forces* 49 (2), pp. 226-239.
- Owens, B.M. (2000). Envisioning Identity: Deity, Person, and Practice in the Kathmandu Valley. *American Ethnologist* 27 (3), pp. 702-735.
- Parathasarathy, D. (2002). Law, property rights, and social exclusion: A capabilities and entitlements approach to legal pluralism. Paper at the XIIIth International Congress of the Commission on Folk Law and Legal Pluralism, 7-10 April, Chiang Mai, Thailand
- Parry, J. (1986). The Gift, The Indian Gift and the 'Indian Gift'. *Man*, New Series, 21 (3), pp. 453-473.
- Price, P. (2005). Ideological Integration in Post-colonial (South) India: Aspects of a Political Language. In C. Bates and S. Basu (eds.), *Rethinking Indian Political Institutions*. London: Anthem Press, pp. 39-62.
- Quigley, D. (1994). Is a theory of caste still possible? In M. Searle-Chatterjee and U. Sharma (eds.), *Contextualising Caste*. Oxford, UK: Blackwell Publishers, pp. 25-48.
- Raheja, G.G. (1988a). *The Poison in the Gift: Ritual Prestation and the Dominant Caste in a North Indian Village*. Chicago: University of Chicago Press.
- Raheja, G.G. (1988b). India: Caste, Kingship and Dominance Reconsidered. *Annual Review of Anthropology* 17, pp. 497-522.
- Rattord, B.S.D (1984). Class and caste differences among Lambadas in Andhra Pradesh. *Social Scientist* 12 (7), pp. 47-56.
- Reddy, D.S. (2005). The Ethnicity of Caste. *Anthropological Quarterly* 78 (3), pp. 543-584.
- Reinicke, M.L. (1996). The urban dynamics of caste: a case study from Tamil Nadu. In C.J. Fuller (ed.), *Caste Today*. New York: Oxford University Press.
- Roth, E.A., Ray, A.K., and Mohanty, B. (1983). The Delineation of Fertility Strategies in a Tribal Population of India: The Koyas of Koraput District, Orissa. *Journal of Anthropological Research* 39 (3), pp. 265-76.
- Roy, T. (1997). Capitalism and community: a study of the Madurai Sourashtras. *Indian Economic and Social History Review* 34, pp. 347-63.
- Rudolph, L., & Rudolph, S. (1967). *The Modernity of Tradition: Political Development in India*. Chicago: University of Chicago Press.
- Schnepel, B. (1995). Durga and the King: Ethnohistorical Aspects of Politico-Ritual Life in a South Orissan Jungle Kingdom. *Journal of the Royal Anthropological Institute* 1 (1), pp. 145-166.
- Singh, H. (2008). The real world of caste in India. *Journal of Peasant Studies*, 35(1), pp. 119-132.
- Snijders, T.A.B. and Nowicki, K. (1997) Estimation and prediction for stochastic block models for graphs with latent block structure. *Journal of Classification* 14, pp. 75-100.
- Somjee, A.H. (1973). Caste and the Decline of Political Homogeneity. *The American Political Science Review* 67 (3), pp. 799-816.

- Srinivas, M.N. (1954). Varna and Caste. In S. Radhakrishnan et al. (eds.), *A.R. Wadia – Essays in Philosophy Presented in His Honour*, 357-64, Bangalore. Reprinted in Srinivas, Collected Essays OUP.
- Srinivas, M.N. (1955). The Social System of a Mysore Village, in M. Marriott (ed.), *Village India*, Chicago: University of Chicago Press. Reprinted in Srinivas, Collected Essays, OUP.
- Srinivas, M.N. (1957). Caste in Modern India. *Journal of Asian Studies* 26. Reprinted in Srinivas, Collected Essays. OUP, pp. 251-76.
- Srinivas, M.N. (1959). The Dominant Caste in Rampura, *American Anthropologist New Series* 61 (1): 1-16.
- Srinivas, M.N. (1975). The Indian Village: Myth and Reality. In *Studies in Social Anthropology: Essays in Memory of Sir E.E Evans-Pritchard*, edited by J. H. M. Beattie and G. Lienhardt. Oxford, UK: Oxford University Press.
- Srinivas, M.N. (2002). The Evolution of Caste in India, in *Collected Essays*, pp. 161-165. New Delhi: Oxford University Press.
- Srinivas, M.N., and A. Beteille. 1964. Networks in Indian Social Structure. *Man* 64: 165-168.
- Srinivasulu, K. (2002). Caste, class, and social articulation in Andhra Pradesh: Mapping different regional trajectories. Working paper no. 179. London: Overseas Development Institute.
- Suri, K.C. (2002). Democratic process and electoral politics in Andhra Pradesh, India. Working paper no. 180. London: Overseas Development Institute.
- Sun, Y., Danila, B., Josic, K. and Bassler, K. E. (2009). Improved community structure detection using a modified fine tuning strategy. *Europhys. Lett.* 86(2), 28004.
- Szreter, S. 2002. The State of Social Capital: Bringing Back in Power, Politics, and History. *Theory and Society* 31 (5): 573-621.
- Tanabe, A. (2006). Recast(e)ing identity: Transformation of Inter-caste relationships in post-colonial rural Orissa. *Modern Asian Studies* 40 (5), pp. 761-796.
- Tanabe, A. (2007). Toward Vernacular Democracy: Moral Society and Post-colonial Transformation in Rural Orissa, India. *American Ethnologist* 34 (3), pp. 558-574.
- Thorner, D. (1954). The Village Panchayat as a Vehicle of Change. *Economic Development and Cultural Change* 2 (3): 209-215.
- Varady, R. (1979). "The North Indian Banjaras: Their Evolution as Transporters," *South Asia: Journal of South Asian Studies* 2 (1-2), pp. 1-18.
- Viramma, with Racine J. and Racine, J. (2002 [1997]). High and low castes in Karani. In D.P. Mines and S. Lamb (eds.), *Everyday Life in South Asia*. Bloomington: Indiana University Press. Originally published in Viramma: Life of an Untouchable, Verso Books.
- Wade, R. (1988). *Village Republics: Economic Conditions for Collective Action in South India*. New York: Cambridge University Press.
- Wasserman, S. and Anderson, C. (1987), Stochastic a posteriori blockmodels: Construction and assessment. *Social Networks* 9, pp.1-36.
- Wasserman, S., and Faust, K. (1994). *Social Network Analysis: Methods and Applications*. Cambridge and New York: Cambridge University Press.
- Woolcock, M. 1998. Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework. *Theory and Society* 27 (2): 151-208.

## APPENDIX A

Name	Caste	Cluster (size)	In Cluster Closeness	Inter-cluster betweenness	Product
Gorinta, EG	Choudhary	A (25)	0.429	0.915	0.392
Velu, HE	Koya		0.343	0.319	0.109
Seri, AX	Yadava		0.421	0.256	0.108
Moti, CQ	Yadava		0.375	0.228	0.086
Sapna, EZ	Koya		0.358	0.101	0.036
Pillai, GB	Yadava		0.324	0.101	0.033
Pillai, FZ	Yadava		0.358	0.085	0.031
Nath, FG	Choudhary		0.429	0.062	0.027
Uday, BC	Unknown		0.333	0.062	0.021
Seri, AT	Yadava		0.393	0.047	0.018
Sapna, EV	Koya		0.270	0.062	0.017
Sapna, FD	Koya		0.270	0.054	0.015
Yarla, FR	Lambadi	B (25)	0.393	0.187	0.073
Ray, GK	Lambadi		0.393	0.124	0.049
Meka, B.	Koya		0.276	0.109	0.030
Lal, BF	Lambadi		0.255	0.078	0.020
Lal, BN	Lambadi		0.253	0.031	0.008
Jai, BR	Lambadi		0.240	0.031	0.007
Palam, HV	Koya	C (22)	0.538	0.272	0.146
Navya, EL	Koya		0.525	0.117	0.061
Palam, HZ	Koya		0.477	0.124	0.059
Jali, CR	Koya		0.538	0.109	0.059
Navya, ET	Koya		0.525	0.093	0.049
Navya, ES	Koya		0.420	0.070	0.029
Palam, HT	Koya		0.477	0.031	0.015
Navya, EK	Koya		0.467	0.031	0.015
Trupti, BA	Koya		0.368	0.039	0.014
Palam, HW	Koya		0.500	0.023	0.012
Trupti, BB	Koya		0.273	0.016	0.004
Joardar, GX	Dudekula	D (22)	0.512	0.321	0.165
Karai, DF	Yadava		0.512	0.184	0.094
Arayar, GO	Mudiraj		0.512	0.179	0.092
Naidu, CY	Mudiraj		0.467	0.187	0.087
Naidu, CV	Mudiraj		0.457	0.106	0.048
Veera, DP	Potter		0.488	0.070	0.034
Naidu, CW	Mudiraj		0.429	0.078	0.033
Chittibabu, DS	Potter		0.396	0.062	0.025
Chevula, CI	Yadava		0.362	0.060	0.022
Velu, HO	Koya	E (18)	0.586	0.617	0.361
Velu, HG	Koya		0.586	0.378	0.222
Velu, HL	Koya		0.654	0.075	0.049
Veena, IJ	Koya		0.472	0.085	0.040
Navya, EJ	Koya		0.425	0.062	0.026
Raag, GU	Koya		0.531	0.047	0.025
Palam, HU	Koya		0.459	0.039	0.018
Palam, HR	Koya		0.415	0.028	0.012

Palam, HP	Koya		0.405	0.028	0.012
Datla, BS	Yadava	F (18)	0.680	0.140	0.095
Datla, BZ	Yadava		0.567	0.124	0.070
Kotla, DO	Yadava		0.459	0.109	0.050
Venu, GF	Yadava		0.531	0.085	0.045
Datla, BT	Yadava		0.486	0.078	0.038
Subbarao, FK	Yadava		0.515	0.054	0.028
Datla, BU	Yadava		0.415	0.054	0.023
Neeti, GN	Potter		0.395	0.047	0.018
Sagi, EI	Yadava		0.370	0.008	0.003
Sapna, FC	Koya	G (16)	0.455	0.474	0.215
Venu, GE	Yadava		0.517	0.246	0.127
Tapi, FP	Lambadi		0.517	0.132	0.068
Yeluri, IN	Yadava		0.625	0.054	0.034
Ramji, GL	Goud		0.500	0.062	0.031
Chevula, CF	Koya		0.517	0.047	0.024
Arayar, GP	Mudiraj		0.441	0.047	0.021
Joardar, GY	Dudekula		0.484	0.039	0.019
Yeluri, IM	Yadava		0.600	0.031	0.019
Joardar, GW	Dudekula		0.429	0.016	0.007
Koli, ED	Mala	H (15)	0.778	1.000	0.778
Koli, EB	Mala		0.737	0.140	0.103
Valli, GG	Lambadi		0.538	0.081	0.044
Koli, EC	Mala		0.583	0.062	0.036
Koli, DY	Mala		0.560	0.062	0.035
Ranga, GS	Mala		0.560	0.047	0.026
Koli, EE	Mala		0.560	0.039	0.022
Vasavi, IL	Mala		0.538	0.039	0.021
Veena, IE	Koya	I (13)	0.800	0.140	0.112
Nag, EF	Yadava		0.429	0.062	0.027
Nara, DE	Lambadi		0.522	0.047	0.024
Chet, DL	Koya		0.522	0.047	0.024
Pai, DJ	Goud	J (11)	0.476	0.210	0.100
Gowda, CP	Yadava		0.714	0.093	0.067
Muthu, GD	Yadava		0.476	0.023	0.011
Sapna, FB	Koya		0.435	0.016	0.007
Veena, IG	Koya	K (8)	0.700	0.716	0.501
Pillai, GA	Yadava		0.438	0.050	0.022
Jali, CS	Koya		0.500	0.031	0.016
Veena, IC	Koya		0.583	0.023	0.014
Yarla, FQ	Lambadi	L (8)	0.467	0.399	0.186
Subba, CB	Yadava		0.778	0.070	0.054
Yarla, FY	Lambadi		0.700	0.062	0.044
Subba, CE	Yadava		0.636	0.062	0.040
Sapna, EW	Koya	M (7)	0.667	0.256	0.171
Sapna, FA	Koya		0.667	0.062	0.041
Sapna, EY	Koya		0.462	0.078	0.036
Sapna, FE	Koya		0.667	0.047	0.031
Sapna, EU	Koya		0.462	0.023	0.011

## The UNU-MERIT WORKING Paper Series

- 2009-01 *Effectiveness of R&D Tax Incentives in Small and Large Enterprises in Québec* by Rufin Baghana and Pierre Mohnen
- 2009-02 *Bridges in social capital: A review of the definitions and the social capital of social capital researchers* by Semih Akçomak
- 2009-03 *The Role of Firms in Energy Transformation* by Radhika Perrot
- 2009-04 *Standards as a platform for innovation and learning in the global economy: a case study of Chilean salmon farming industry*
- 2009-05 *Consumer behaviour: evolution of preferences and the search for novelty* by M. Abraham Garcia-Torres
- 2009-06 *The role of consumption and the financing of health investment under epidemic shocks* by Théophile T. Azomahou, Bity Diene and Luc Soete
- 2009-07 *Remittances, lagged dependent variables and migration stocks as determinants of migration from developing countries* by Thomas H.W. Ziesemer
- 2009-08 *Thinking locally: Exploring the importance of a subsidiary-centered model of FDI-related spillovers in Brazil* by Anabel Marin and Ionara Costa
- 2009-09 *Are International Market Demands Compatible with Serving Domestic Social Needs? Challenges in Strengthening Innovation Capacity in Kenya's Horticulture Industry* by Mirjam Steglich, Ekin Keskin, Andy Hall and Jeroen Dijkman
- 2009-10 *Industrialisation as an engine of growth in developing countries* by Adam Szirmai
- 2009-11 *The motivations, organisation and outcomes of university-industry interaction in the Netherlands* by Isabel Maria Bodas Freitas and Bart Verspagen
- 2009-12 *Habit Formation, Demand and Growth through product innovation* by M. Abraham Garcia-Torres
- 2009-13 *The Diffusion of Informal Knowledge and Innovation Performance: A sectoral approach* by M. Abraham Garcia-Torres and Hugo Hollanders
- 2009-14 *What does it take for an R&D tax incentive policy to be effective?* by Pierre Mohnen and Boris Lokshin
- 2009-15 *Knowledge Base Determinants of Technology Sourcing in the Clean Development Mechanism Projects* by Asel Doranova, Ionara Costa and Geert Duysters
- 2009-16 *Stochastic environmental effects, demographic variation, and economic growth* by Théophile T. Azomahou and Tapas Mishra
- 2009-17 *Measuring eco-innovation* by Anthony Arundel and René Kemp
- 2009-18 *Learning How to Consume and Returns to Product Promotion* by Zakaria Babutsidze
- 2009-19 *Strengthening Agricultural Innovation Capacity: Are Innovation Brokers the Answer?* by Laurens Klerkx, Andy Hall and Cees Leeuwis
- 2009-20 *Collinearity in growth regressions: The example of worker remittances* by Thomas H.W. Ziesemer
- 2009-21 *Foreign Direct Investment in Times of Global Economic Crisis* by Sergey Filippov and Kálmán Kalotay
- 2009-22 *Network-independent partner selection and the evolution of innovation networks* by Joel Baum, Robin Cowan and Nicolas Jonard
- 2009-23 *Multinational enterprises, development and globalisation: Some clarifications and a research agenda* by Rajneesh Narula and John H. Dunning
- 2009-24 *Why Rural Rich Remain Energy Poor* by Bilal Mirza and René Kemp
- 2009-25 *Compliance with the private standards and capacity building of national institutions under globalization: new agendas for developing countries?* by Michiko Iizuka and Yari Borbon-Galvez
- 2009-26 *The Impact of the Credit Crisis on Poor Developing Countries: Growth, worker remittances, accumulation and migration* by Thomas H.W. Ziesemer

- 2009-27 *Designing plans for organizational development, lessons from three large-scale SME-initiatives* by Tinne Lommelen, Friso den Hertog, Lien Beck and Raf Sluismans
- 2009-28 *Growth with imported resources: On the sustainability of U.S. growth and foreign debt* by Thomas H.W. Ziesemer
- 2009-29 *Innovative Sales, R&D and Total Innovation Expenditures: Panel Evidence on their Dynamics* by Wladimir Raymond, Pierre Mohnen, Franz Palm and Sybrand Schim van der Loeff
- 2009-30 *Malthus' Revenge* by Luc Soete
- 2009-31 *Preparing for the Next, Very Long Crisis: Towards a 'Cool' Science and Technology Policy Agenda For a Globally Warming Economy* by Paul A. David
- 2009-32 *Innovation and Economic Development* by Jan Fagerberg, Martin Srholec and Bart Verspagen
- 2009-33 *Attracting and embedding R&D by multinational firms: policy recommendations for EU new member states* by Rajneesh Narula
- 2009-34 *Student Network Centrality and Academic Performance: Evidence from United Nations University* by Ying Zhang, Iman Rajabzadeh and Rodolfo Lauterbach
- 2009-35 *Reverse knowledge transfer and its implications for European policy* by Rajneesh Narula and Julie Michel
- 2009-36 *Innovation for the base of the pyramid: Critical perspectives from development studies on heterogeneity and participation* by Saurabh Arora and Henny Romijn
- 2009-37 *Caste as Community? Networks of social affinity in a South Indian village* by Saurabh Arora and Bulat Sanditov