

## Tribal Society and Scientific Temper in Post-Independence India

Dr. Mirza Md. Sabbir

State Aided College Teacher, Category -1, (Sact-1), Department of History  
Purnidevi Chowdhury Girls' College, Bolpur, Birbhum – 731204

### Abstract:

Tribal society and the generation of scientific temper in post-independence India takes a decisive place in the overall discussion of social transformation, education and inclusive development. The available literature emphasises the fact that tribal communities, which were historically defined by cultural autonomy, ecological knowledge systems and marginalisation by colonial powers, were faced with a completely changed socio-political landscape following independence. The key issue emerged from the studied literature is unequal application of scientific temper, which is seen as rational inquiry, critical thinking, and potential opposition to superstition, to the tribal social organisation in cases of state-driven development and educational intervention. The literature reviewed is largely analytical and literature based and is based on sociological, anthropological, educational, and policy-based research. All these works indicate that as much as constitutional protection, education growth and developmental programmes were aimed at fostering modern scientific perspectives, they have been limited by structural inequalities, lack of proper implementation, cultural discontinuities, and entrenched social exclusion. Tribal knowledge systems were often positioned in opposition to scientific rationality rather than recognised as complementary, thereby restricting the organic development of scientific temper. Education has become a prevailing factor but inequity in access, quality and relevance still determines outcome. The review of literature indicates that scientific temper among tribal society needs culturally sensitive educational practises and developmental policies that do not ignore the indigenous epistemologies but allow rational and critical interaction with the modern science.

**Keywords:** Tribal society, scientific temper, post-independence India, tribal education, social inclusion, development policies

### Introduction

The issue of the manner in which the tribal society in India has engaged with the concept and practise of scientific temper in the post-independence era is incorporated in the broader scholarly discussions on the topic of social transformation, education, development, and the interplay between tradition and modernity. The element of the Indian population, represented by tribal communities, is a socially and culturally diverse group that is traditionally defined by a relative geographical isolation, specific social institutions and knowledge systems, which are closely interconnected with the environment and life of the community. The end of colonial

Published: 16 February 2026

DOI: <https://doi.org/10.70558/IJSSR.2026.v3.i1.30839>

Copyright © 2026 The Author(s). This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).

rule and the gaining of independence was a major change in the relationship that the state had with tribal society because the policies of isolation and inspired control were officially substituted with the constitutional protection, planning, and participation in the national system. In the new context, the advancement of scientific temper has become an ideological objective of the Indian state, which was perceived as a precondition of democratic citizenship, logical decision-making, and socio-economic development.

In the given sources, one can continually find the literature that highlights the fact that colonial experience has broken the independence of tribes by alienating their lands, reinforcing their administrative structure, and introducing foreign legal and economic systems. The post-independence policy structures aimed at redressing these historical injustices by acknowledging tribal rights, safeguarding cultural uniqueness and enhancing access to education and welfare programmes. Meanwhile, these interventions were strongly related to an ideology of development, which gave priority to a modern science, rationality and planned progress. Scientific temper, which is the attitude based on rational thinking, empirical confirmation, willingness to doubt, and the absence of superstition, became one of the main aims of education and social reform. This attitude was promoted as the key to not only personal progress but also the overall change of the society according to the constitution values.

But, even the currently available literature shows a constant conflict between the normative ideal of scientific temper and the realities of tribal society. A number of studies suggest that the development policies commonly have treated the tribal communities in a deficit model with a clear understanding that modern scientific rationality is superior to the indigenous belief systems and practises. This strategy more often than not led to a lack of alignments between policy intent and social outcome. Although schools, residential institutions and specific schemes were used to increase the access to education, access was still uneven and the quality inconsistent especially in remote tribal areas. This meant that the ability of education as a powerful means of cultivating scientific temper was greatly restricted.

Academic debates also indicate that the systems of tribal knowledge, which are based on experiential learning, environmental adaptation, and shared wisdom, were hardly realised as an acceptable source of rationality in the development discourse. They were commonly, instead, divided into pre-scientific or traditional, which served to map a binary confrontation between tradition and science. This opposition restricted the potential of more dialogic relationship whereby scientific temper would not be displaced but could develop in the context of engagement with indigenous epistemologies. Another theme, present in the literature, was the fact that social exclusion, poverty and political marginalisation still had the impact on the conditions that the tribal communities faced in the context of the introduction of modern education and scientific ideas. These structural aspects hindered the internalisation of scientific temper as a social practise which was lived and made it become a formal or an external ideal.

The research findings on education in the materials that were given indicate that there are quantifiable differences in the growth of the scientific attitude and reasoning abilities in tribal and non-tribal groups, especially at secondary level of education. This happens not to provide evidence of some intrinsic restrictions, but to be the effects of unequal educational conditions, language barriers, courses of study that are culturally irrelevant, and inadequate contact with

enquiry-based learning. The focus on memorization and the results of examinations also constrained the possibilities of the development of critical thinking and the ability to ask questions, which are the main elements of scientific temper. Therefore, the literature indicates that the initiative of inculcating scientific temper on tribal communities has not been finished and has not been uniform on its effects.

Cultural respect and gradual integration were expressed as policies at the policy level to influence tribal development strategies in post-independence. However, as studies of particular behaviours have determined, implementation has been more about administrative goals and economic exploitation than social empowerment. Trust into the institutions of the state was destroyed because of the development-caused displacement, ineffective inclusion of the tribal communities in the decision-making, and the destruction of traditional livelihoods. In these types of contexts, the advancement of scientific temper might seem abstract or unrelated to the current social and economic issue. This contradiction between the rhetoric significance of the scientific outlooks and the material circumstances needed to ensure their ongoing evolution is thus indicated in the literature.

Although the body of work on tribal development, education and social exclusion is very extensive, integrative analysis that explicitly looks at the relationship between the tribal society and scientific temper as socio-cultural process in post-independence India is scarcely found in the literature. Current literature is inclined to discuss scientific temper either in the perspective of education or psychology, or to refer to tribal society rather in the context of policy, identity, development. Minor synthesis which bridges these strands to critically evaluate how scientific temper has been conceptualised, propagated and practised in tribal social contexts over the years is limited.

It is on this background that the current study is disposed to a critical analysis of the tribal society and scientific temper in post-independent India based purely on available scholarly literature. It attempts to place the concept of scientific temper in the context of the historical, social, and policy-based changes that have befallen tribal communities, to examine the way in which educational and developmental interventions have influenced its spread, and to establish the gaps in concept and practise that have inhibited its more profound socially. In this way, the research will serve as a contribution to a more refined perspective of scientific temper as the result of education but also as the orientational dimension of social construction whose evolution cannot be discussed outside the framework of discrimination, cultural acceptance, and structural justice in tribal society.

### **Methodology**

The current research was based on a qualitative, conceptual, and literature-based research design based solely on a close reading and analysis of the scholarly PDFs given on tribal society, scientific temper, and post independent development in India. The sources of information were peer-reviewed journal articles, edited volumes, institutional materials, and academic teaching materials. The literature was chosen based on how it directly related to the tribal social structure, the traditional knowledge systems, the scientific temper, and the educational and developmental interventions of the states following the independence. The

sources that did not discuss these thematic issues explicitly were also eliminated. It was analytically and interpretively analysed and has adopted a systematic thematic reading, conceptual categorisation, and syntheses of arguments through the literature. Instead of making a comparison of empirical results, the research looked into convergences and gaps in academic approaches to explain how scientific temper has been framed, marketed and limited in tribal settings. This methodology allowed the author to achieve a logical interpretation of the topic without exceeding the limits of the evidence of the literature reviewed.

### **Literature Review**

An overview of the literature is necessary in order to place the current study into the overall scope of the academic knowledge and to determine its academic sense. The review of previous literature allows seeing the way tribal society, development, education, and scientific temper have been conceptualised and analysed throughout the years. This kind of review also helps to determine the prevailing viewpoints, methodological inclinations and unanswered questions in the literature and thus aid in defining the gap in research and also outline the scope and path of the current investigation regarding tribal society and scientific temper in post-independence India.

In the article Tribal Development Policies in India: An Overview, Misal (2016) analysed how the policies of tribal development in the colonial Britain have been carried into the post-independent India. The main goal was to describe such key policy frameworks as isolation, assimilation, and integration, as well as evaluate their impact on the tribal communities. The research took a descriptive and analytical methodology using the secondary sources. It came up with the conclusion that post-independence development policies that sought to assimilate tribals into the mainstream of the country, although retain cultural identity, had some gaps between policy formulation and implementation which constrained their transformative effect.

Evolution of Tribal Policy in India: Pre- and Post-Independence examined how the state has historically engaged with the community living in tribes. The research was centred on the constitutional provisions, constitutional strategies of planning as well as ideological changes following independence. It has employed historical and policy analysis to point out that in as much as the Indian Constitution stressed on social justice, education and economic up-lifting of Scheduled Tribes, structural exploitation and administrative issues remained to impact tribal society. The paper emphasised the role of education and modernisation in transforming the tribal life taking into consideration the enduring marginalisation.

In his article Shaw (2024) in Tribals in Post-Independence India: An Overview) discussed socio-economic and educational status of tribal people living in the rural and urban areas. This was aimed at evaluating the success of developmental programmes in enhancing the living standards and literacy. It was a descriptive study that was based on census data and policy documents. It discovered that even with the constitutional protection and the welfare programmes, tribal areas remained in high poverty and illiteracy levels, which showed disproportionate developmental results.

The learning resource Concepts and Methods: Tribal Studies was a valuable academic guide to the society of the tribes in India. This work was aimed at defining the concept of tribe,

discovering the development of tribal studies and social organisation of the tribes, their movement and political strategies. It found in an interdisciplinary survey of anthropological and sociological literature that tribal societies are heterogenous and active, and that contemporary education and development intervention has changed traditional institutions in significant ways frequently without sufficient sensitivity to indigenous knowledge systems.

The materials of his course Tribes in India compiled by Pankaj discussed the definition, characteristics, culture, and the modern-day problems of the tribes. It was also pedagogical, the goal being to get the students accustomed to tribal society, constitutional protections and development programmes. Based on several secondary sources, the information emphasised the recurring issues connected with education, health, displacement, and social transformation, and identified the influence of state policies in the process of tribal integration.

In A Study of Scientific Attitude and Aptitude among Schedule Tribe Students at Secondary Education, Talukdar and Roy (2019) studied the issue of scientific attitude level among Scheduled Tribe students. The methodology employed in the study is an empirical methodology with the use of standardised instruments to classify scientific attitude and aptitude. The results showed that the main problem to overcome superstition and dogmatism is the development of a scientific outlook based on education, yet students with tribal background have limited possibilities with socio-economic and educational disadvantages.

In Scientific Temper and Academic Achievement among Tribal and Non-Tribal Students, Andrabi and Jabeen (2017) used a comparative study to investigate the relationship of scientific temper and academic achievement. Through quantitative approach and a scale of scientific temper, the study established a significant level of scientific temper and achievement among non-tribal students whereas the same was not so great among tribal students. The authors explained this disparity by disparities in the education settings and not individual ability.

In Tribes and Social Exclusion, Xaxa (2011) discussed tribal marginalisation sociologically. The research question was to learn the role of the historical process of colonialism, land alienation and state policies in the social exclusion. It found through the application of analytical and historical approaches that post-independent development did not usually succeed in reinforcing tribal autonomy, and that structures of exclusion still shaped education, resources, and participation with indirect impact on the propagation of rational and scientific attitudes.

Edited volume Critical Issues in Tribal Development (2009) covered various concepts of tribal development such as education, displacement, livelihoods and policy implementation. The general idea of the research was to discover the causes of the gradual tribal development in spite of the decades of planning. According to the contributions made by empirics and analytic, the volume concluded that development initiatives tended to remain inclusivity and that educational empowerment is core to instilling rationality, awareness, and long-term social change in the tribal society.

### **The Tribal Society: The Social Structure and Traditional Knowledge.**

The peculiarities of the tribal society in India presuppose that one should pay closer attention

to its unique social structure and the place of traditional knowledge systems that historically determined the life of communities. The books all underscore the point that the tribal communities are structured in terms of kinship, clan, and lineage relations, and the social cohesion is reinforced by the traditional norms, resources shared by the community, and spirit of operating autonomously as a community. These structural arrangements are not just social arrangements but the cornerstones to economic practises, belief systems and knowledge transmission. Tribal social organisation has therefore acted as a complete system where the social, cultural and ecological aspects cannot be separated and brought stability and continuity between generations.

Anthropological literature has emphasised that, the social organisation of tribes is typified by a relative equality, lack of strict hierarchy and proximity between social roles and subsistence activities. According to Dube (1977), the tribal communities were historically developing adaptive social institutions which were affected by the surrounding environment, production modes, and cultural practises. These were institutions that controlled marriage, inheritance and leadership using customary laws as opposed to legal systems. These social structures encouraged a sense of collective responsibility and solidarity, as well as made it possible to safeguard traditional knowledge that remains hidden in daily routine. But the literature it is also noted that these structures did not remain and were sensitive to outside forces especially in the colonial era and post-independence where administrative intervention as well as the market forces started to redefine the tribal social relations.

The traditional knowledge takes a reference centre in the tribal society that is the indigenous ecological, medical, agriculture, and resource management knowledge. The research highlights that this is an experiential type of knowledge that is passed on orally and tightly connected to the natural environment. Singh (1991) notes that tribal knowledge systems are cumulative intellectual tradition that has been evolved through a long-term relationship with local ecosystems containing rationality and empirical observation in a culturally particular system. This kind of knowledge informed agricultural patterns, forestry, and health behaviour and helped communities to live in frequently vulnerable ecosystems. Although scientifically important, this knowledge was often marginalised in the development discourse which often inclined towards privileging the formal scientific knowledge over the indigenous systems.

The literature also implies that the policies and educational systems that were established after independence were not usually sufficient to engage the tribal social organisation and traditional knowledge. According to Majumdar (1958), the classification of the tribes as socially backward concealed the internal coherence and functional logic of the social institutions of the tribes. This view helped to create a disposition to consider traditional knowledge as being incompatible with modern scientific rationality. Consequently, scientific temper interventions often ignored the fact that the indigenous epistemologies might also be extended. The destruction of old social relations with as a result of displacement, alienation of land and formal education systems undermined the processes of transfer of knowledge, which resulted in cultural dislocation and social fragmentation.

Taken together, the literature reviewed demonstrates that tribal social organisation and traditional knowledge are a complex and reasonable system that has been in use supporting the

life of the community since times immemorial. The problem with post-independence India is not the replacement of these systems, it is the acknowledgment of the value of such systems and the ability to bring them to bear on the present scientific perspectives effectively. It follows that the consideration of the indigenous knowledge and social organisation in tribal societies must be informed engagement with the tribal society in order to understand the broader connexion between tribal society and the formation of scientific temper.

### **Scientific Temper during Post-Independence India.**

Scientific temper became an especially important notion in post-independence India as it was one among a bigger group of national projects that sought social change, democratic citizenship, and rational modernity. Scientific temper is placed by the literature not as scientific knowledge or as technical capability, but as an attitude of mind based on critical inquiry, logical reasoning, openness to evidence, and opposition to dogma. This orientation in the context of colonial rule was considered the key to the defeat of superstition, social stagnation, and inherited inequalities, particularly in groups of people who previously did not have access to formal schooling, as well as institutional authority. Scientific temper therefore turned out as a philosophical ideal and a tool of nation-building.

The thought of early post-independence vehemently associated scientific temper with education, social reform and cultural change. Nehru (1958) defined scientific temper as a mode of thinking in which the focus was on the spirit of inquiry, readiness to challenge the existing views, and openness to change using logic and evidence. This idea was not limited to laboratories and classrooms and was applied to ordinary social life that promoted rational interaction on social issues, economic growth and political involvement. In the literature, it is indicated that this kind of understanding placed scientific temper as in accord with democratic values, pluralism, and intellectual freedom and also as a remedy to unquestioning traditionalism. Nevertheless, it also uncovers that this vision was not equally realised among the social groups because there were differences in the access to education, as well as resources.

Afterwards, scientific temper became a constitutional and civic ideal institutionalised in the later policy-oriented literature. Government of India (1992) formally defined it as a central characteristic of a progressive society, which is defined by inquiry, evidence-based reasoning, and the freedom to doubt. This expression cemented the perception that scientific temper was not limited to the scientists or elites, but should be developed throughout the society in the form of education, in the public discourse, and social practise. According to the literature, this institutional framing was aimed at instilling scientific temper in the school curricula and the life of people, which would connect it with other objectives of social equality and national development.

Although scientific temper was central to the literature, it suggests perennial discrepancies between the vision of scientific temper and socialisation. The inherent structural inequalities, disparities in educations, and insensitivity to culturally oriented pedagogies curtailed its internalisation especially in the marginalised communities. Scientific temper tended to be an unrealized goal instead of an internalised societal practise, and the necessity of context-sensitive teaching methods. In general, the analysed literature introduces scientific temper in

post-independence India as the project of change but a disputable one, influenced by the ideals of aspirations but limited by the traditional socio-economic and cultural obstacles.

### **State Policies and Tribal Development after Independence.**

The two requirements, namely, social justice and national integration influenced post-independence state policies towards tribal development, and education, health, and scientific advancement were noted to be key instruments of change. According to the literature, constitutional protection and the developmental strategies aimed to compensate historic marginalisation through the expansion of welfare benefits and institutional assistance to the tribal areas. Education was also given a central place not only as a source of literacy and skills development but also as a source of rationalisms and scientific temper. The development programmes and health interventions were also viewed as effective measures to ameliorate the quality of life and include the tribes into the overall developmental path of the country. But academic evaluations emphasise that those policy intentions were frequently confronted with severe restrictions on execution and performance.

Analysis concentrating on policies highlights the fact that educational programmes in tribal regions have increased tremendously due to residential schools, scholarship programmes as well as special area development programmes, although institutionalised obstacles still exist. Sarma (2009) states that despite the observable positive changes in enrolment and infrastructures, the post-independence interventions often have not been able to respond to the contextual realities like linguistic diversity, cultural discontinuity, and teacher absenteeism. Consequently, education usually did not have a close tie to tribal social life, so it could not foster critical inquiry and scientific reasoning. Health policies also focused on institutional reach and biomedical models, which proved ineffective due to poor infrastructure and community involvement, which reinstated their reliance instead of empowerment.

Critical assessments of tribal development also indicate that promotion of science in state policy to a large extent was a top-down approach. Ota (2009) notes that development planning would put more emphasis to technocratic solutions and extraction of resources and mostly ignore indigenous knowledge systems and local participation. This practise limited the social legitimacy of scientific intervention and undermined the belief in state-directed programmes. Further, access to health and education services was compromised by displacement occasioned by massive development projects, which contradicted the gains that would have been made. Similarly, Sharma (2009) observes that improvement of tribal development was lopsided in spite of decades of specific programmes owing to disunity in the administration, absence of accountability, and the inadequacy of incorporating welfare, education, and livelihood programmes. Taken as a whole, the literature indicates that post-independence policies though well intentioned in nature, were not that successful in promoting sustainable development and scientific temper among the tribal people because of structural and institutional limitations.

### **Conclusion**

The above discussion of Tribal Society and Scientific Temper in Post-Independence India reveals the intricate and very unequal connexion between the social order, the role of the state, and the development of the rational and scientific perspectives of tribal society. The literature

review has shown that tribal society has a historical basis on cohesive social institutions and deep systems of traditional knowledge which are empirically informed and environmentally adaptive. Concurrently, the post-independence India declared scientific temper as a normative ideal to be used in the democratic citizenship, social progress, and development of the nation. The overall lesson gained during this research is that dialogue and integration between the pair of domains have caused less of an impact in the interaction of the two compared to asymmetry, where modern scientific rationality is often enforced without much consultation with local epistemologies.

The research filled a gap in the body of research which has been established in the previous sections; namely the unavailability of integrative scholarship that explicitly explores scientific temper as a socially situated phenomenon within tribal settings, and not as a teaching or psychologically confined outcome. The analysis has elucidated the role of structural inequalities, culturally incongruent education, and top-down development models in limiting the spread of scientific temper among the tribal populations by compiling literature on the tribal social structure, the traditional knowledge, and scientific temper, and development policies championed by the state. By so doing, it has shown that scientific temper cannot be effectively cultivated without wider concerns to social inclusion, cultural identification and participatory growth.

Simultaneously, the research is also limited to some extent. It is all founded on secondary sources, which limit its capability of capturing current variations and the experiences lived in the various tribal regions. Even the literature is unequally covered by the region, and frequently does not represent the voices of the community, but rather the policy point of view. As well, the idea of scientific temper conceptualization in the readings is still more of a normative approach with little empirical interest in how the tribal communities redefine or bargain scientific rationality in daily life.

Further studies would be useful to use empirical studies on the context-specific understanding and practise of scientific temper within tribal societies, especially in response to indigenous knowledge systems. Regional comparative analysis would help to clarify the differences in policy effect, and an interdisciplinary approach that incorporates anthropology, education, and science studies would help provide more detailed information on culturally responsive science education models. These directions are necessary in developing a more inclusive and dialogic concept of scientific temper that appeals to tribal Indian social reality.

## References

1. Dube, S. C. (1977). Tribal heritage of India. New Delhi, India: Vikas Publishing House.
2. Singh, K. S. (1991). The tribal situation in India. Shimla, India: Indian Institute of Advanced Study.
3. Majumdar, D. N. (1958). Races and cultures of India. Bombay, India: Asia Publishing House.
4. Nehru, J. (1958). The discovery of India. New Delhi, India: Oxford University Press.
5. Government of India. (1992). Statement on scientific temper. New Delhi, India: Ministry of Science and Technology.

6. Misal, D. M. (2016). Tribal development policies in India: An overview. *International Journal of Humanity and Social Sciences*, 5(1), 81–83.
7. Dube, S. C. (1960). *Approaches to tribal problems in Indian anthropology in action*. Ranchi, India: Council of Social and Cultural Research.
8. Andrabi, A. A., & Jabeen, N. (2017). Scientific temper and academic achievement among tribal and non-tribal students. *The International Journal of Indian Psychology*, 4(3), 1–8.
9. Talukdar, D., & Roy, D. (2019). A study of scientific attitude and aptitude among schedule tribe students at secondary education. *Journal of Emerging Technologies and Innovative Research (JETIR)*, 6(6), 1007–1014.
10. Shaw, C. L. (2024). Tribals in post-independence India: An overview. *The Academic*, 2(3), 141–149.
11. Vidyarthi, L. P., & Rai, B. K. (1985). *The tribal culture of India*. New Delhi, India: Concept Publishing Company.
12. Xaxa, V. (2011). *Tribes and social exclusion*. New Delhi, India: CSSSC–UNICEF.
13. Ota, A. B. (Ed.). (2009). *Critical issues in tribal development*. Bhubaneswar, India: Scheduled Castes & Scheduled Tribes Research and Training Institute.
14. Sarma, G. V. V. (2009). Some critical issues in tribal development. In A. B. Ota (Ed.), *Critical issues in tribal development*. Bhubaneswar, India: Scheduled Castes & Scheduled Tribes Research and Training Institute.
15. Government of India. (2003). *Science and technology policy* (pp. 25–26). New Delhi, India: Ministry of Science and Technology.
16. Verma, R. C. (1995). *Indian tribes: Through the ages*. New Delhi, India: Ministry of Information and Broadcasting, Government of India.
17. Mallick, M. A. (2011). Tribal development scenario in West Bengal: A study of Jamalpur Block of Burdwan District. *The Indian Journal of Social Work*, 72(3), 316.
18. Agarwal, J. C. (2009). *Education in the emerging Indian society*. New Delhi, India: Shipra Publishing House.