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K. V. Mardia's *The Scientific Foundations of Jainism* as a Neo-Orthodox Jain Treatise

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Abstract: In his 1991 chapter, "Orthodoxy and Dissent: Varieties of Religious Belief among Immigrant Gujarati Jains in Britain," based on fieldwork in the English city of Leicester, Marcus Banks identifies three tendencies within Jain faith: orthodoxy, heterodoxy, and neo-orthodoxy, which presents itself as scientific. I discuss multiple ways in which the 1990 book *The Scientific Foundations of Jainism*, by the Indian-born British Jain statistician K. V. Mardia, represents neo-orthodoxy. Mardia's approving mentions of the former ascetic Chitrabhanu reflect the neo-orthodox de-emphasis on ascetics in favour of lay teachers. Although himself a follower of the Śvetāmbara sect, Mardia adopts a typically neo-orthodox non-sectarian position. Through both text and figures, Mardia presents Jain doctrine in terms of scientific concepts and terminology, e.g., labelling the binding of karma by the soul *karmic fusion*, explained as the soul's absorption of subatomic particles called *karmon*s, and illustrating the process with a figure resembling a physics diagram. His construction of Jainism as scientific is supported by his use of quantification and analogies drawn from science and technology.

Keywords: diaspora, K. V. Mardia, neo-orthodoxy, science

Introduction

This article identifies the 1990 book *The Scientific Foundations of Jainism*, by the Indian-born British Jain statistician K. V. Mardia, as representative of the neo-orthodox tendency within Jainism. Neo-orthodoxy, which "claims for itself the status of a science" (Banks 1991, 252), was described by Marcus Banks on the basis of fieldwork conducted in the English city of Leicester, primarily from 1982 to 1983. Like neo-orthodoxy in general (Banks 1992, 207–10; Banks 1991, 252–54; Dundas 2002, 273),

Mardia's book is a product of globalisation, reflecting the encounter of inherited Jain doctrine with Western science. Although the neo-orthodox perspective is also found in India,[1] such intercultural encounters are particularly intense in the diasporic context, where changes to Jain culture and belief are inevitable. One radical point of divergence between Jain experience in India and in the diaspora is the relative absence of monks and nuns in the latter environment. Although the majority of Indian Jains are laypeople, lay communities in India receive guidance from ascetics, who act as a living reminder of the transcendent goal of Jainism, and acquire merit from serving them. Because fully initiated ascetics are unable to use any mode of transport other than walking, however, Jain lay communities in the diaspora are largely cut off from regular contact with them. One of the characteristics that Banks (1991) identifies for neo-orthodoxy is a recentring of religious authority: Lay teachers' authority is emphasised at the expense of ascetics' (252–54).

As shown below, *The Scientific Foundations of Jainism* reflects the neo-orthodox admiration for lay teachers judged to be authoritative but also affirms the value of the ascetic life (indicating that the neo-orthodox perspective is compatible with significant respect for the ascetic path). After discussing Mardia's distinctively neo-orthodox views on religious authority and other topics, I will examine how he presents Jain doctrine in terms of scientific concepts and terminology, before concluding with discussion of two items found in a second-hand copy of the book, which open a small window onto the variety of approaches represented within British Jainism in the late twentieth century.

Banks's 1991 chapter "Orthodoxy and Dissent: Varieties of Religious Belief among Immigrant Gujarati Jains in Britain" is an important contribution to the scholarly literature on diasporic Jainism. In it, Banks identifies three tendencies within Jain faith (also described on pages 202–10 of the 1992 book based on his PhD thesis, published a year later): orthodoxy, heterodoxy, and neo-orthodoxy. Orthodoxy is "traditional Jainism … exemplified by … ascetics" (248), the form of Jain belief considered to prevail in India, although no individual in Leicester adopted this position for most of their time. Orthodoxy is "rooted in sectarianism and ritual" and "flourishes best in parochial undisturbed situations" (248). Heterodoxy, unlike orthodoxy, involves "belief in a supreme God" (249). While some of Banks's informants understood the *tīrthaṅkara*s as avatars of this God (250), others "believed in a controlling, creating deity beyond the *tīrthaṅkar*s in the way that certain Hindus believe in a controlling, creating deity beyond the named deities in the Hindu pantheon" (250–51). The third tendency, labelled *neo-orthodoxy* by Banks, "claims for itself the status of a science" with applicability for both "the individual in his present situation" and "society" (252). Banks views claims made by informants that Mahāvīra was the first to make

[1] For Jains' increasing appeals to modern science, both in and outside India, see Aukland (2016).

discoveries such as "the existence of bacteria, the nature of the atom and the theory of relativity" as manifestations of neo-orthodoxy and identifies a "stress on adapting Jainism to modern times (or rather, finding in Jain writings and teaching that which is best suited to modern times)" (254) as the "keynote" of this tendency. From the neo-orthodox perspective, "with … knowledge and discipline anyone can be a Jain, and those who are born into Jain families do not have a statutory right to salvation" (253). Neo-orthodoxy is characterised as uninterested in ascetics (252). Importantly, orthodoxy, heterodoxy, and neo-orthodoxy are "categories of belief, not believers" and "there is not a fixed, dedicated group devoted to each of the belief types" (247).

The fieldwork that led to Banks's 1991 chapter was conducted as part of his doctoral research, which also included fieldwork in Jamnagar, Gujarat, the former home of the Viśā Śrīmāḷī Jains with whom he worked in Leicester.[2] In the book based on his thesis, he writes of the difficulty of reconciling "the extensive literature on Jainism, which presented it as a coherent religious system, with my own observations, which were largely those of division" (Banks 1992, 219). Division appears at multiple levels: social divisions, e.g., "the complex divisions and groupings by which the Jamnagar Jains organize themselves corporately" (47), are mirrored on the ideological level by the existence of the different tendencies described in the previous paragraph. Nonetheless, Banks opines that "the perceived reality of doxa is that which mitigates against the tendency for fission within the 'community'" (230).

Banks's pioneering scholarship remains essential reading for researchers on diasporic Jainism. Multiple scholars have built on his work and used the terminology he introduced in more recent publications. For example, Christopher Miller and Jonathan Dickstein, writing in 2021, say, "we would like to suggest that Jain veganism complicates Banks's three-part model insofar as diasporic Jain veganism is being interpreted in light of intricate Jain theories linking karma and *ahiṃsā*, and at times under the authoritative influence of Jain ascetics," even while Jain veganism is "often described in the 'scientific' discourses of transnational veganism" (2021, 15). Rather than seeking to refute Banks's analysis, they attribute the alleged mismatch to "significant generational, technological, and cultural developments [that] have impacted the Jain diasporic landscape" since the publication of Banks's chapter. Similarly, Anja Pogačnik, who conducted fieldwork on the Leicester Jain community itself in the mid-2010s, found it "difficult to translate [Banks's] orthodox, neo-orthodox, and heterodox tendencies into contemporary Jain practice" in Leicester due to diachronic changes (2018, 137). Instead, she identified *religious* and *spiritual* styles of Jainism in Leicester, the latter of which she views as a likely descendant of Banks's neo-orthodoxy (139–40).

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[2] The Viśā Śrīmāḷīs are a Vāṇiyā caste incorporating both Jains and Vaiṣṇavs (Cort 2004, 86).

Like Miller, Dickstein, and Pogačnik, I regard Banks's typology as insightful in the context of late twentieth-century Britain, but not universally valid. The subject of this article, a cultural product close in both space and time to the location of Banks's fieldwork, conforms almost perfectly to Banks's description of neo-orthodoxy, confirming the substantial accuracy of his characterisation of this tendency; nonetheless, I will show below that the text provides reason to suppose that neo-orthodox attitudes towards ascetics can be more positive than Banks's formulations might suggest.

In the preface to *The Scientific Foundations of Jainism*, Mardia, who was born in Rajasthan in 1935 (Mukhopadhyay 2002, 113) and migrated to England as a Commonwealth Scholar in 1964 (120), states that "this work started with [his 1975] Inaugural Address as Professor of Statistics at the University of Leeds" (Mardia 1990, ix), a position he continued to hold at the time of the book's publication in 1990. Thus, Banks's fieldwork was carried out during the gestation period of Mardia's book. Leeds is about two hours away from Leicester, by either train or car. Both on the M1 motorway, the two cities fall within what Virinder Kalra (2006) refers to as the "Indian corridor" of cities connected by the M1 and M6, along with other cities with substantial British Asian populations such as Bradford and Birmingham (338–39). Mardia was involved with the development of Leicester's Jain temple (Mukhopadhyay 2002, 143).

Previous Scholarship on *The Scientific Foundations of Jainism*

Previous scholarly work on *The Scientific Foundations of Jainism* is limited. Knut Aukland (2016) comments that "cosmography, tellingly, is not dealt with in the book. This is true of most scientization literature, revealing how scientization implies a selective highlighting of some parts of Jain literature while disregarding others" (218). Indeed, reconciling traditional Jain cosmology (which places us on the innermost of a vast series of concentric islands located on a flat world beneath a series of heavens and atop a series of hells) with the findings of modern science poses evident challenges. Aukland also links Mardia's creation of the term *karmon* (which he describes as "a neologism that mixes the words atom and karma," though I think that *proton* and *neutron* are more relevant than *atom*, due to their phonetic shape and because Mardia [1990, 10] understands karmons as subatomic) to the fact that "the Jains are traditionally unique in India for thinking of karma as a physical substance" (206).

In the preface to his book, Mardia writes:

> There has recently been a revival in seeking to understand Jainism and to search for its meaning in a modern context. Young Jains abroad who are

> brought up in a multicultural community are trying to understand its relevance in the new environment. Jainism, I suggest, was founded on scientific foundations which can be assessed by each individual … For this book we assume a nodding acquaintance with Mathematics and Physics. This allows us to use a sharper scientific and pictorial representation than would otherwise have been possible. Many Jain children follow their religion by birth rather than by conviction; there are about 9 million Jains in India and about 100,000 abroad. It is hoped that such a book as this might help teenagers to be Jains through conviction. (1990, ix)

Melanie Barbato's (2018, 163) brief discussion of this quote connects Mardia's book to *anekāntavāda* (the doctrine of many-sidedness), the "central Jain intellectual position that … a variety of approaches and standpoints … has to be incorporated into any ontological judgement" (Dundas 2002, 229). In this case, Mardia attempts to integrate the scientific approach with Jain doctrine. Barbato observes insightfully that "the only universally accepted standard that is of 'relevance in the new environment' … is taken to be natural science" and that "as religion in general seems to have lost its traditional power, Mardia and others try to align Jainism with the strong camp of science in order to bind the young generation" (2018, 163). While similar pressures are felt in India, the quest for relevance may seem particularly urgent in the diaspora, as Mardia's (1990, ix) reference to young Jains growing up "abroad" suggests. Adherents to a perpetual minority tradition, Jains have always had to reckon with dominant cultures that differ from their own, but this must be the case to a historically unprecedented extent for diasporic Jain communities living in Western countries.

Barbato discusses Mardia's book alongside other modern Jain attempts to "connect with other, non-religious systems of thought, particularly natural science" (156). Among the attempts at connection with science, she distinguishes between affirmative and theoretical types of association. Texts of the affirmative type "try to support their position through reference to the external source of science" (168) but stop using "scientific examples … where the analogy [is] no longer useful for illustrating a genuine Jain position" (169), while texts of the theoretical type go further and associate "abstract scientific theories … with Jainism" (169). As an example of the affirmative type, Barbato (167) discusses the case made against eating eggs by the Jain monk Muni Shri Bhadrabahu Vijayaji (Ramappa 1986, 73–74). According to him, the "modern scientific stand-point" supports this traditional Jain prohibition due to the "excessive Cholesterol" contained in eggs and the fact that they contain no vitamin C. One example of the theoretical type that Barbato (2018, 169) mentions is M. R. Gelra's *Jain Studies and Science*, which claims that "to some extent the theory of evolution is in consonance with the Jainism, particularly, the concept of karmic body accompanying a soul from one birth to another sounds like the postulate of Darwin's theory which states the gene flow from one generation to the next" (Gelra 2007, 101). Although

Barbato does not explicitly say so, the theoretical type of association is clearly also represented in *The Scientific Foundations of Jainism*. Mardia goes beyond the use of scientific evidence exemplified in Muni Shri Bhadrabahu Vijayaji's book by connecting multiple scientific theories to Jainism, for example claiming that the concept of the interchangeability of matter and energy "has been with Jains for centuries" (Mardia 1990, 86); this is reminiscent of Gelra's linkage of the theory of evolution with Jainism.

Conversion, Openness, Adaptation, and Authority

Mardia's expression of hope that *The Scientific Foundations of Jainism* "might help teenagers to be Jains through conviction" (ix), rather than practising Jainism merely because their parents did so, recalls Banks's (1991, 253) observation that, from a neo-orthodox perspective, "those who are born into Jain families do not have a statutory right to salvation." Although Banks's informants came from Jain backgrounds, those most deeply committed to neo-orthodoxy had often had a "conversion" experience, as in the case of the president of Leicester's Jain Samāj, who had been raised as a Jain but claimed that he had become interested in his religion only in the mid-1970s. The statement in Mardia's preface that his book is intended to stimulate conversion experiences (in Banks's sense, i.e., experiences that deepen religious commitment in subjects already belonging to the Jain community) in young Jains reflects its neo-orthodox orientation.

Conversion experiences are not confined to neo-orthodoxy, since intensification in religious commitment can take multiple forms. A remarkable twenty-first-century example of a diasporic Jain conversion experience that took an orthodox form is that of Rishi Zaveri (now Muniraj Shree Rushihem Vijayji), an Indian-American Jain brought up in the US from the age of two and a half, who has described his youth as marked by "nothing really spiritual, like, anything, like, extra compared to anyone else" (Zaveri 2025), but who, while studying at the University of Michigan, developed a relationship with a Jain monk who provided him with guidance during a stressful period and later became his guru; Zaveri's journey (or at least its mundane portion) culminated in *dīkṣā* in June 2025. Nonetheless, there is a clear connection between the neo-orthodox conversion experiences mentioned by Banks and the neo-orthodox "emphasis on rationality" (Banks 1991, 255). People with Jain backgrounds do not automatically possess the "knowledge and discipline [with which] anyone can be a Jain" (253). Consequently, personal intellectual growth is also required. Mardia aims to encourage conversion experiences (not explicitly so termed) specifically by constructing Jainism as scientific; given the neo-orthodox character of this project, I think it is undeniable that the transformations he would like to promote are similar in

kind to those experienced by the president of the Leicester Samāj and other members of his community who "consistently held a neo-orthodox position" (Banks 1991, 253).

Along with the belief that birth into a Jain family does not guarantee salvation goes the neo-orthodox idea that "with … knowledge and discipline anyone can be a Jain," regardless of ethnicity (Banks 1991, 253). Mardia expresses a similar attitude at the beginning of the first chapter of his book. Its initial words, "*Namo Arihantanam*" (1990, 1) constitute the beginning of the *pañcanamaskāra*, the most important Jain mantra (Dundas 2002, 81), and are the first of five expressions of homage to revered religious figures that make up the mantra. If this opening reflects Mardia's allegiance to Jain tradition, the explanation he immediately provides strikes a more modern note: "This is the first line of the fundamental prayer of Jains which says, 'I pay my profound respect to any living person who has conquered his inner enemies (or his own lower nature)'. This is irrespective of the religion, caste or social status of the individual" (1990, 1). This neo-orthodox explanation departs from the traditional meaning of the phrase, which literally translates, "Homage to the *arhat*s" (i.e., in this context, the *tīrthaṅkara*s), but it draws upon the folk-etymological understanding of the Prakrit word *arihanta-* (in fact equivalent to Sanskrit *arhat-* meaning "worthy") as "enemy-killing."

Whereas Jains traditionally follow one of two major sects, Digambara and Śvetāmbara Jainism (both themselves divided into subgroups), and are also organised into castes, the neo-orthodox belief that Jainism should be open to all is accompanied by the rejection of divisions within the existing Jain community based on sectarian affiliation or caste. Banks (1991, 253) identifies the teachings of the anti-sectarian Jain teacher Shrimad Rajachandra (1868–1901) as a major source of inspiration for neo-orthodoxy. Like Banks's informants, Mardia is a Śvetāmbara, but he adopts a typically neo-orthodox non-sectarian position. He states that "the basic beliefs of Jainism … are followed by all Jains" (1990, 4–5), regardless of sect, and the sources he cites for the four axioms in which he encapsulates Jain doctrine include the *Pañcāstikāyasāra* of the Digambara author Kundakunda (1990, 105).

Alongside Shrimad Rajachandra, Banks names the former monk Chitrabhanu (1922–2019) as another teacher who exerted a major influence on neo-orthodoxy (1991, 253). Chitrabhanu's writings feature the "stress on adapting Jainism to modern times (or rather, finding in Jain writings and teaching that which is best suited to modern times)" that is "the keynote of neo-orthodoxy" (254). Chitrabhanu was a spiritual teacher of Mardia's (Mardia 2025), and Mardia makes multiple approving mentions of him in his book. For instance, when discussing the *anuprekṣā*s, the twelve reflections in which ascetics should engage, Mardia (1990, 69) comments that "the traditional approach makes them rather negative but Chitrabhanu … has stated them in a more positive manner." He then integrates Chitrabhanu's approach into his own account, indicating approval of his teacher's adaptation. The first topic for reflection, for

example, is *anitya* (impermanence). I assume that Umāsvāti's *Tattvārthasūtra* and its commentaries are representative of the "traditional approach" to which Mardia alludes. Nathmal Tatia's (1994) translation combines Umāsvāti's auto-commentary on *Tattvārthasūtra* 9.7, which lists all twelve *anuprekṣā*s, with the portion of Pūjyapāda's *Sarvārthasiddhi* related to the same verse. The explanation of impermanence goes as follows: "Reflecting upon impermanence of the body, which is defined as an internal apparatus, and of external apparatus such as beds, seats, clothes, encourages detachment from worldly things" (223). This can reasonably be described as "rather negative." By contrast, the relevant chapter of Chitrabhanu's book *Twelve Facets of Reality: The Jain Path to Freedom* is entitled "The Changeless Beneath the Changes"; the title already suggests a focus on the positive. In the chapter, Chitrabhanu reassures the reader that "there is the changeless; essence remains … It only appears as though dusk with its beauty and glow has disappeared. And yet we know it has not gone permanently. Dusk is somewhere, in some new form" (1980, 9). Moreover, he even has good things to say about the ceaseless change that characterises *saṃsāra*, for example stating that "changes make everything new and fresh" (5).

Mardia's (1990, 70) explanation of the first *anuprekṣā* reads: "There is impermanence of everything surrounding one but there is unchanging soul beneath the changing body." While, in accordance with tradition, he asserts the impermanence of material entities, he follows Chitrabhanu in stressing the presence of the changeless soul; the use of the preposition "beneath" is a specific verbal link between his formulation and the title of Chitrabhanu's chapter. The shift in emphasis (on the part of both Chitrabhanu and Mardia) is probably intended to make the *anuprekṣā* more attractive to modern readers such as the young diasporic Jains referred to in the preface, who might find more negative formulations off-putting. However, Mardia does not imitate Chitrabhanu's positive perspective on change itself, perhaps because it deviates too far from traditional teaching.

Chitrabhanu was a controversial figure, and the divergent perspectives on him found within the global Jain community reveal something about how the neo-orthodox and orthodox tendencies differ. Born Rup-Rajendra Shah (Rosenfield 1981, 4), he took *dīkṣā* in 1942 (Vekemans 2023, 39); as a Śvetāmbara Mūrtipūjaka monk, he was called Munishri Chandraprabhasagarji. In 1970, he left India to participate in a conference in Switzerland, violating the traditional prohibition on mechanical transportation for ascetics (Rosenfield 1981, 261–64). This act provoked dramatic resistance from devotees: According to the biography written by his disciple Clare Rosenfield, "hordes of people" (263) attempted to stop him from entering the van that would take him to the airport, and "ten busloads" (264) travelled to the airport with the intention of blocking the entry. After his return from Europe, he decided to leave the monastic life (279). In 1971, he married one of his disciples and travelled (via East Africa, the UK, and the Netherlands) to the US (282; 283–88), where he would establish

a Jain meditation centre (Banks 1991, 254). By the time of Banks's fieldwork, his international reputation was well established. Banks states that Chitrabhanu was held in high regard by his Leicester informants, although his rejection of the ascetic life and his marriage made him the object of disapproval in India. Similarly, Pascal Tozzi notes that "la diaspora jaïne, dans sa grande majorité, n'a jamais tenu rigueur à ses cadres ex-ascètes d'avoir rompu leurs vœx" (Tozzi 2011, 206; The Jain diaspora, in its great majority, has never held having broken their vows against its ex-ascetic leaders; my translation).

Banks (1991, 252) states that "neo-orthodoxy for the most part ignores the Jain ascetics, considering them to be narrow-minded and ritualistic." In a tabular presentation of the features of the three tendencies discussed earlier, he goes so far as to characterise neo-orthodoxy as "anti-ascetic" (255). While the orthodox viewpoint regards ascetics as the highest religious authorities, neo-orthodoxy centres the authority of lay teachers such as Chitrabhanu (who was once an ascetic but chose to walk—or fly—away from the monastic life) and Shrimad Rajachandra (who never took *dīkṣā*). From the orthodox perspective, Chitrabhanu cannot appear entirely admirable. What Rosenfield (1981, 264) calls a "mass demonstration" by people opposed to his use of mechanical transportation in 1970 reflects the depth of feeling aroused by his deviation from traditional monastic conduct, and his subsequent choice to live as a married layman could hardly fail to offend further. While many of Chitrabhanu's critics were no doubt laypeople distressed by his failure to live up to the high standards expected of a monk, ascetics have also voiced criticism of him.[3] Nonetheless, ascetic disapproval of Chitrabhanu had no impact on the respect for him shown by Banks's Leicester informants and by Mardia in *The Scientific Foundations of Jainism*. This demonstrates the neo-orthodox prioritisation of the authority of (specific) lay teachers (those who are judged to have advanced knowledge) over that of ascetics.

The treatment of ascetics in *The Scientific Foundations of Jainism* is somewhat more positive than Banks's characterisation of neo-orthodoxy might suggest. Despite Mardia's (1990, 69) comment on the negativity of the "traditional approach" to the *anuprekṣā*s, mentioned above, his book does affirm the value of the ascetic life. In chapter 8, "The Purification Prescription," Mardia describes the use of austerities to prevent karmic influx and free the soul from previously absorbed karmic matter in terms of progress through the fourteen *guṇasthāna*s or "stages of quality" (spiritual levels ranging from *mithyātva*, "ignorance," to disjunction from all karma). The sixth *guṇasthāna*, at which austerities "become effective … once the basic foundation is laid down," is a crucial stage (67). In accordance with standard Jain doctrine (Jaini 2023, 370), Mardia (1990, 69) identifies this level as that attained by those who have taken ascetic vows. In other words, he follows tradition in this passage by identifying

[3] This was confirmed by a Jain community member who prefers to remain anonymous.

ascetics as highly spiritually advanced (more so than even the most excellent laypeople). His statement that *vātsalya* (love), one of eight positive qualities that develop in those who reach the fourth *guṇasthāna*, "involves a selfless devotion to the ideal of moksa [*sic*] and thus great devotion to the monks pursuing this goal" (68) is also noteworthy.

As mentioned in the introduction, Banks (1991, 247) clearly states that orthodoxy, heterodoxy, and neo-orthodoxy are "categories of belief, not believers" and that "there is not a fixed, dedicated group devoted to each of the belief types." One possible way to deal with Mardia's statements about asceticism, accordingly, would be to assume that he is inconsistent in his neo-orthodoxy in this book. Although he usually expresses the neo-orthodox perspective, this does not preclude him from shifting into orthodoxy, with its reverence for ascetics. I consider this analysis untenable, however. The discussion of the sixth *guṇasthāna* in chapter 8 is not accidental but an integral part of the book. Mardia presents four axioms (the fourth divided into three subparts) that he considers fundamental to Jainism, on which he elaborates in chapters 2 through 7. For example, chapter 7 is concerned with Axiom 4C, "Austerity forms the karmic shield against new karmons as well as setting off the decaying process in the old karmic matter" (53). These chapters are followed by Mardia's account, in chapter 8, of the austerities through which karmic influx may be prevented and previously bound karma removed. As a practitioner, Mardia is ultimately concerned with justifying Jainism as a religious path, not merely presenting a model of reality; chapter 8 is thus vital. Within this chapter, Mardia indicates the importance of the sixth *guṇasthāna*, the stage reached only by ascetics on the path to the highest goal in Jainism: liberation. Given the book's overall neo-orthodox tenor, the discussion in chapter 8 suggests that the neo-orthodox perspective need not entail an anti-ascetic stance. Nonetheless, Mardia's affirmation of the value of the ascetic path should not obscure the fact that neo-orthodox discourse deprioritises ascetic authority in favour of the authority of lay teachers such as Chitrabhanu; as discussed above, *The Scientific Foundations of Jainism* reflects this significant shift in emphasis.

Constructing Jainism as Scientific in *The Scientific Foundations of Jainism*

The inclusion of the birth of Aristotle, a key figure in the history of Western science, in the timeline showing selected key dates in Jain and world history that accompanies the introduction to Jainism presented in the first chapter of Mardia's book sets a tone that will be sustained throughout the work (3). Through both text and figures, Mardia presents Jain doctrine in terms of scientific concepts and terminology. As a professional scientist, he is well placed to engage in this strategy. As of June 24, 2026,

his profile on the website of the University of Leeds's School of Mathematics stated that he held the Chair of Applied Statistics from 1973 until 2000, when the university created for him the post of senior research professor, which he still holds. Awards he has received include the Royal Statistical Society's Guy Medal in Silver, the American Statistical Society's Wilks Memorial Medal, and an OBE (Officer of the Most Excellent Order of the British Empire) for services to statistical science.

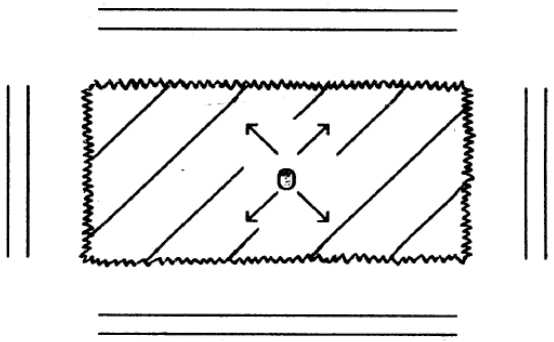


Fig. 2.3 Karmic fusion (zig-zagged boundary) with an incoming karmon of Fig. 2.2

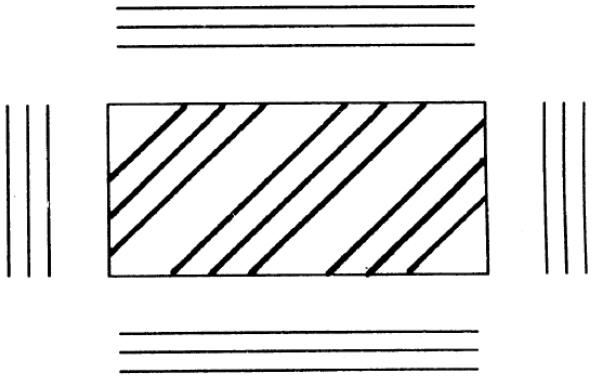


Fig. 2.4 Revised karmic matter (more and thicker diagonal lines) after fusion in Fig. 2.3.

Figure 1: Figures representing karmic fusion and its aftermath. Reproduced from Mardia (1990, 12, figs. 2.3, 2.4) by permission of the author.

Over the course of the book, Mardia associates Jain teachings with multiple areas of science, from particle physics to cosmology. The process whereby karma binds the soul, keeping it trapped in the cycle of rebirth, is explained as the absorption of karmons, a kind of subatomic particle, by the soul and labelled *karmic fusion* (10–11). The term *karmon* is Mardia's own invention and is clearly modelled on physics terms such as *proton* and *neutron* (Mardia 2025). A series of figures, the last two of which are reproduced here as figure 1, schematically represents the soul surrounded by a karmic force field, the karmic influx triggered by this field, karmic fusion, and the increased

volume of karmic matter after fusion (11–12). These images unmistakably resemble physics diagrams. On a larger scale, the reader learns that "Jains believe that the universe is finite and it contains various worlds supporting life, including human life" (Mardia 1990, 49). Mardia's terminological choices here clearly evoke a scientific register.

Multiple passages in Mardia's book reflect an impulse toward quantitative expression. When discussing the hierarchy of life forms, for example, Mardia (1990, 20–21) deploys the traditional Jain typology based on the number of senses that each organism has, but he also introduces the idea of "life-units" (19), of which "the pure soul will have an infinity … whereas an insentient object will have zero." Entities in between these two extremes have varying numbers of life-units, specified in two diagrams (20; 22). For example, plants have 10^{-3} life-units (20). Mardia comments that "these divisions have always existed qualitatively in Jain Science, but we can now quantify them" (19). It is implied that this is a desirable addition. Similarly, Mardia follows a summary of the *guṇasthāna*s with the statement that "it will be useful to express these ideas quantitatively" (60). He proceeds to do so, assigning a numerical value to the karmic density of each level (61). Each figure is arrived at by combining the values assigned to perverted views, nonrestraint, carelessness, anger, pride, deceit, subsidiary passions, greed, and activities at the relevant stage. However, Mardia admits that "these scores and scales are very arbitrary" (60). Why, then, is quantitative expression useful? While Mardia's fondness for quantification is no doubt partly due to the fact that he is a statistician, it can also be connected to a wider trend. Theodore Porter (2020, 7) notes that "expertise has more and more become inseparable from objectivity" and even that "an objective method may be esteemed more highly than a profound one" (5) in the modern world. Through his quantificational presentation, Mardia seeks to make a claim for the objectivity of Jain doctrine.

Epistemologically, Mardia (1990) casts the Jain pursuit of truth as basically scientific in nature. He writes that in the absence of omniscience (which only liberated souls enjoy) "we are left with the other four types of knowledge, namely through mind and senses, scriptures (the highest authority in the field!), clairvoyance and mind-reading" (79). The exclamation mark suggests a humorous awareness that the phrase "authority in the field," with its academic connotations, consorts oddly with seeking truth in scripture.

The use of visuals throughout the book is a major component of Mardia's overall strategy. The use of figures to connect Jain doctrine to physics has been discussed above. Another striking example is Mardia's figure 3.3, which represents the "four main directions, which the mental state can take": a "hellish state" of extreme mental pain, a "heavenly state" characterised by "hedonistic pleasure," an "animalistic state" in which the subject is ignorant of past and future, and the "average human state," intermediate between the hellish and heavenly states (23). In the diagram, these four

states are represented by the four arms of a swastika. Jain readers must instantly recognise the traditional use of this ancient Indian symbol to symbolise the four *gati*s or main destinies to which a soul may be reborn (as a celestial being, hellish being, plant/animal, or human) (Cort 2001, 17), here rebranded as a scientific diagram.

Mardia's (1990) construction of Jainism as scientific is supported by his use of a range of analogies drawn from science and technology. "The principles are intended to be self-verifying so that the follower constructs truths for himself rather like a research worker in a laboratory," he states (4). When discussing the volitional aspect of violence, Mardia chooses examples drawn from the world of modern applied science: A neurosurgeon whose patient dies under the knife incurs less karma than a murderer, and an arable farmer must bear the karmic cost of deliberately destroying life through the use of pesticides and herbicides (49). The soul, contaminated by karma, is likened to gold ore in which pure gold is mingled with dross (9) and to a magnet attracting karmic iron filings (16–17), the "volitional activities of body, mind and speech … act and react in the karmic field as reactions in a nuclear reactor," and so forth (53).

Conclusion

I stumbled across Mardia's book when my mother gave me a second-hand copy as a present. One of the great charms of second-hand books is, of course, the traces such books often bear of the lives of their former owners. Tucked into the pages of this particular volume, I found two items that open a small window onto late twentieth-century British Jain life. One is a pamphlet, *Live and Help to Live: Questions & Answers on Jainism*, published by the Leicester-based Jain Samāj and written by Paul Marett, an English lawyer, academic, and writer on Jainism, now deceased, who was personally acquainted with Mardia and wrote the foreword to *The Scientific Foundations of Jainism*. Not surprisingly, given Banks's (1991, 255) observation that "most of … the committee [of the Samāj] … were committed wholeheartedly to neo-orthodoxy," the pamphlet contains statements that suggest a neo-orthodox bent. In response to the question "Do Jains believe in God?", Marett (n.d.) writes: "Not in the sense of a creator or judge or controller of universe," denying the theism that is a key feature of heterodoxy. The final question is "How does Jainism fit into the modern world?" In his answer, Marett states that "to many thinkers Jainism stands up better than many religions to the discoveries of modern science."

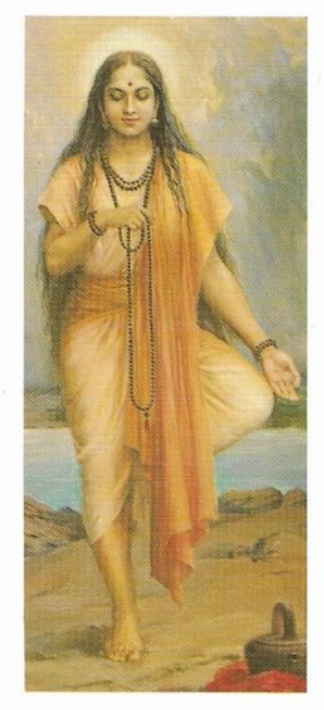


Figure 2: Reproduction of a painting of Kanyakumari, found in the author's copy of The Scientific Foundations of Jainism.

The other insert in Mardia's book is perhaps more surprising. It is a small reproduction (figure 2) of the 1986 oil painting of the Hindu goddess Kanyakumari by the artist S. M. Pandit (1916–1991), whose realist mythological images have left a lasting legacy in the world of Indian calendar art (Jain 2007, 152). The temple of Kanyakumari, the virgin goddess, in the city of the same name in Tamil Nadu sits at the southernmost tip of the Indian subcontinent. The painting shows the goddess in meditation on the coast. Facing the viewer, she stands on one leg, her eyes closed.

The presence of such an object in a Jain context suggests Banks's heterodoxy. Banks (1991, 251) notes that this theistic tendency is "open to all forms of religious expression where *bhakti* may be found" and that "most of the Jains in Leicester visited the town's Hindu temples occasionally, even frequently, and had Hindu deities in their home shrines." Heterodoxy's inclusivity also enables it "to encompass features of [orthodoxy and neo-orthodoxy]. That is, when an individual who usually adopts a heterodox viewpoint espouses one of the other tendencies temporarily, he is able to do so because of his heterodoxy" (255–56). By contrast, "neo-orthodoxy, while expressed occasionally by many Jains, is adhered to almost exclusively by some, by virtue of the fact that some of its features are predicated upon a rejection of the other positions" (256). Adherents of neo-orthodoxy deplore the "laxness or eclecticism" of heterodoxy (255).

Kanyakumari's insertion within Mardia's book illustrates the ability of heterodoxy to incorporate features of neo-orthodoxy. The fact that the former owner possessed

Mardia's book in the first place, together with the inclusion of Marett's pamphlet, suggests that they were a Jain and, moreover, deeply interested in their religion. At the same time, their spirituality was inclusive enough for them to revere Kanyakumari and to see no contradiction in placing her image within the book, perhaps as a bookmark.

Although the most neo-orthodox Jains would disapprove of Jain reverence for Kanyakumari, I see a paradox here. Neo-orthodoxy, which acknowledges the value of Western science and embraces scientific discourse as a vehicle for the eternal truths of Jainism, is itself founded on a radical form of inclusiveness. I see the development of neo-orthodoxy as a modern manifestation, facilitated by globalisation, of an openness and flexibility that have long characterised Jainism, in accordance with *anekāntavāda*. We can consider, for example, the engagement of the Śvetāmbara monastic author Haribhadra Yākinīputra with non-Jain frameworks in his eighth-century *Yogadṛṣṭisamuccaya*. In Christopher Chapple's (2003, 85) words, "Haribhadra cloaks the Jain *guṇasthāna* system in the combined guise of Patañjali's Aṣṭānga Yoga and a Tantric Aṣṭā Mātṛkā system." *The Scientific Foundations of Jainism* reflects a similar mixture of faithfulness to tradition and appreciative incorporation of tools developed outside that tradition, in this case the tools of Western science. This article has discussed some of the ways in which Mardia uses text and imagery to present Jainism as scientific in *The Scientific Foundations of Jainism*, in addition to considering his distinctively neo-orthodox views on religious authority and other topics. Neo-orthodox works like Mardia's claim for Jainism the authority that science enjoys in Western society and represent one way in which Jains living in the West argue for Jainism's continuing relevance under the historically unprecedented circumstances of the diaspora.

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