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# EARLY INDIAN MUSICAL SPECULATION AND THE THEORY OF MELODY

Lewis Rowell

Our musical legacy from Western antiquity consists of many words and few tunes. While the surviving documents are, in many cases, extremely informative with respect to the construction of the musical systems, they tell us next to nothing about how actual melodies came to be written and what sort of guidelines constrained the choices of the composer. The present paper addresses some basic issues in ancient melodic theory, by means of an exposition of the early Indian theory of melody, with comparisons to what remains of Classical Greek melodic doctrines. The comparative approach works both ways: our appreciation of the achievements of early Western music theory is enhanced by considering alternative solutions, and we can gain insight into a foreign musical system by discovering analogues—as well as startling contrasts—to our own. We pose these questions:

1. What does a theory of melody seek to accomplish—lay out a gamut, outline specific melodic pathways thereon, prescribe a set of musical models, describe an existing repertoire, establish certain melodic functions?
2. By what principles are the two primary dimensions of pitch and time structured in sets of analytic topics?
3. To what extent can early melodic theory be read as a record of *evolution*—of a musical system and of a musical repertoire?

The approach in this paper will be in three stages, becoming increasingly specific: first, an introduction to the genres, concerns, and distinctive features of early Indian musical thought and the intellectual and cultural framework within which it flourished; second, an examination of the Indian and Greek systems in relatively gross terms, by means of the principal topics used to dissect the domains of pitch and time; and third, a brief study of the Indian theory of melody, with particular attention to the relationship between the established pitch gamut and the authorized selections to be made therefrom, that is, melodic composition.

### MUSIC IN EARLY INDIAN THOUGHT

The Indian tradition of musical speculation is by far the richest and most ancient treasury of Asian musical thought. While China's musical heritage is of comparable antiquity, the surviving body of texts is considerably smaller;<sup>1</sup> further, it is evident that musical speculation per se held little interest for the practical scholars of early China. The few texts that survived the Great Book-Burning and other similar cultural upheavals focus upon the role of music in ceremony and are highly prescriptive; the components of the musical system are treated as givens and not subjected to any kind of penetrating analysis. The Indian mind, on the other hand, delighted in mental gymnastics, verbal puzzles, and the most profound inquiry into the nature of music and its context in the Indian worldview. And just as the Sanskrit language is the easternmost branch of the Indo-European tree of languages, so is the early Indian musical system more amenable to analysis in categories familiar to the West than the musics that evolved in the regions of East Asia dominated by Sinitic culture.

Thus the music of India has a formidable theoretical base of great antiquity, and contemporary Indian music (apart from the music of the Bombay films and the tribal musics of peripheral India) is informed by a rigorous body of melodic, rhythmic, and aesthetic theory whose roots are clearly discernible in the earliest surviving texts from more than 2,000 years ago. This extensive corpus of *musica speculativa* is still virtually inaccessible to Western musicians, due to the poor state of the texts and the stylistic intricacies of the Sanskrit language. And the few translations into Western languages have done little to close this gap, suffering either from an overly-free style of translation or weighed down by the voluminous explanatory notes that must inevitably accompany a translation that attempts to remain accurate. In the end translations are quite useless until one learns the system.

The scholars of ancient India faced the same set of problems that confronted Western thinkers: how to objectify the experience of music

so it could be taught, learned, remembered, and repeated accurately; how to separate the phenomena of music from such other cultural activities as speech, chant, poetry, and ceremonial movement; how to identify and arrange in systematic order the components of the major dimensions of music: pitch and time; how to define the units, groupings, and higher levels of the musical hierarchy and prescribe guidelines for selecting, combining, and recognizing various parts of the musical system.

The Sanskrit word for music is *saṅgīta* ("concerted song"), a term that includes not only vocal and instrumental music but also dance. *Saṅgītasāstra*, the study of treatises on music, is usually translated today as "musicology." Early Indian literature is full of puns on the words *sāstra* and *śastra*; the former means a venerable treatise, the latter a sword. Because of their phonetic similarity, both words have often (and on dubious grounds) been attributed to the Sanskrit verbal root meaning "to correct, chasten." The semantic development of the word *sāstra* is quite clear: from the basic meaning "to correct," it evolved as follows: (1) to restrain, control, rule, govern; (2) to command, enjoin, decree; (3) to teach, inform; and a series of even further attenuated meanings that include both "to praise" and "to blame!" Nowhere is there any explicit connection with the root meaning "to cut" (as in *śastra*), but there are clear indications of an aggressive, often punitive, brand of pedagogy. The word for student (*śiṣya*) derives from the same root as *sāstra* and means literally "he who is to be punished." It is evident that *saṅgītasāstra* is not only a prescriptive discipline but one designed to uphold tradition—not overthrow it.

There is bound to be lively debate over the dating of treatises in a country where there are no surviving manuscripts over 400 years old and where worms and heat have taken their toll of the palm-leaf pages, but most scholars agree that the three oldest and most important musical texts may reasonably be dated between the first and fifth centuries A.D., although many portions of these texts may date from as much as a thousand years earlier. Since later texts are invariably designed as glosses or commentaries on earlier texts and include abundant quotations, the lines of descent can usually be traced and become quite clear by the end of the first millennium.

The three texts provide not only the main evidence for this study but also an excellent introduction to the genres of early musical speculation: the *Nāradyaśikṣā* (the *śikṣā* ["phonetic treatise"] attributed to the legendary sage Nārada) is a manual that teaches the proper chanting of the hymns of the *Sāmaveda*;<sup>2</sup> Bharata's *Nāṭyasāstra* is a wide-ranging treatise on the theater, with chapters on such diverse topics as acting, playwriting, makeup, singing, dancing, instrumental music, and drumming;<sup>3</sup> the *Dattilam* (an otherwise-untitled treatise by the author

Dattila) is apparently a concise performance manual for the style of ritual theater music known as *gāndharva*. Dattila addresses only the topics of *svara* (pitch) and *tāla* (time), but—since his exposition closely parallels Bharata’s chapters on the same topics—furnishes independent verification of many difficult passages and issues.<sup>4</sup> By far the most important and authoritative of the later commentaries is the exhaustive commentary that the eleventh-century Kashmiri scholar Abhinavagupta appended to the *Nāṭyaśāstra*; despite all its opaque passages and textual uncertainties, his commentary *Abhinavabhāratī* remains the most invaluable body of exegesis for the earlier texts and the standard against which all later commentaries must be measured.<sup>5</sup>

Authority is an interesting issue in Indian scholarship. The Indian philosophical tradition attaches as great value to *testimony* as it does to perception and inference, and both the written text (no matter how dubious) and the utterance of text citations are held in a reverence that never fails to astonish Western academics. Indian scholarship is designed to reconcile, to harmonize conflicting opinions, to explain away apparent contradictions, and above all to promote the status quo—not to reveal error or misinterpretation. Thus commentators go to extreme lengths to rationalize what is most probably scribal error, thereby accounting for some of the intellectual gymnastics with which Indian music theory is riddled. Modern scholars, notably at Banaras Hindu University, are making some progress in cleaning up the major texts, but something of the old veneration still persists. The Indian tradition of *musica speculativa* is often described by a familiar botanical metaphor: a tree that accepts new grafts onto the central trunk, rejecting others and sloughing off old growths. The central core of ideas is somehow beyond criticism, surrounded by a gradually-accumulating body of amplification and interpretation, not unlike the tradition of scholarship in the Western Middle Ages.

The authority attached to the texts is extremely heavy in the absence of precise musical notations. Indian musical notations are even more skeletal than early Western notations, although both sol-fa and drum syllables are found in the early texts. But even if one takes the dubious step of assuming the modern equivalents of these symbols, only the barest bones of the music remain. Even in modern Indian practice, a performer does not learn a piece from notation alone—it must be learned from a teacher. So the most one can say for the most informed modern reconstruction is that it can be shown not to be in conflict with the *śāstras*.

The discipline of music flourished amidst colorful and exotic surroundings in the Indian intellectual tradition. It was held in the highest esteem and invested with an aura of religious mysticism and cosmic symbolism that is firmly embedded in Indian consciousness. Music was

often referred to as *pañchama Veda* (the "Fifth Veda") and regarded as a means of revelation. It was also linked with the philosophy and practice of *yoga* (literally "attachment") and served as a model for yogic practice in the rigorous discipline and concentration of the performer and his attachment to the ideal model he is following. Music, the least material of the arts, had obvious attractions for the Indian philosophical tradition which taught that matter is illusion. Music afforded both the performer and auditor a glimpse of eternal reality: by their attachment to what is real (often attained by means of a trance-like state), they obtain detachment from what is illusion. Thus the Indian philosophy of music has important ontological and epistemological dimensions, and the performance of Indian music has acquired metaphysical overtones which have profoundly affected all the contexts in which the subject of music appears.

The origins of most ancient art musics can probably be traced to ritual, but these roots lie more exposed in Indian music than in the West. Music, insofar as we know, first appears in Indian literature in the genre known as *śikṣā*. The *śikṣās* were practical handbooks for the correct utterance of the sacred Vedic texts and the proper performance of the accompanying ritual gestures, supplemented by lists of maxims for everyday life—how to brush one's teeth with twigs, avoid the company of gamblers, women, and actors, and the like. In the *śikṣās* there is some evidence that the *tāla* gestures, which control the rhythm of all later Indian music, grew out of the hand motions made by the priest as he chanted the *Sāmaveda* hymns. In fact I believe very strongly that some traces of the old Vedic notion of music as sacrificial ritual still inhere in the performance of Indian music: the theory of *nāda*, usually translated as "causal sound," is the foundation for the Indian concept of music.<sup>6</sup> It details the emergence of articulate sound from the continuous substratum of vital sound that inhabits the innermost region of the body, as symbolized by the constant drone that has been a feature of Indian music since the Middle Ages. Every emission of breath, every utterance of a musical sound or of a sacred formula (*mantra*), puts the singer in control of this inner reservoir of divine sound, and the idea of music as pure *emergence* from within is one of the most basic concepts in Indian thought. The accompaniment of music by gesture (as in Vedic chant) provides a ritual measurement of the bodily channels and regions through which the emerging sound travels. The philosophical tradition has addressed these questions in detail too great for the scope of this paper, but with this background it is easy to see why vocal music is the model for all Indian instrumental musics and why music and phonetics are so closely intertwined in the *śikṣā* literature. Music was a sacred utterance, and every aspect of its production had to be meticulously prescribed for the novice. The accompanying gestures were, to borrow

a phrase, "outward and visible signs" of an inward and spiritual process.

The *śikṣā* genre formed one of the six *Vedāṅgas*, "limbs of the Vedas." Here are their domains:

1. *Śikṣā*, apart from music, was concerned primarily with articulatory phonetics and was subdivided into such topics as individual sounds, accents, quantities, the organs of speech, delivery, and euphonic laws; its overall purpose was correct recitation of the texts.<sup>7</sup>

2. *Kalpa* described the proper rituals.

3. *Vyākaraṇa* was a means for the grammatical analysis of the texts.

4. *Nirukta* was a method for understanding word etymologies.

5. *Chandas* meant the study of poetic metres.

6. *Jyotiṣa* was the subject of astronomy, a science that was highly developed in early India but here applied mainly to determine the correct times for the Vedic sacrifices.

The disciplines fall into pairs: *śikṣā* and *chandas* were concerned with performance, *kalpa* and *jyotiṣa* with ceremonies, *vyākaraṇa* and *nirukta* with the texts themselves, which had to be preserved in exact detail—so exact (so the story goes) that when the redactors of the Vedas assembled their evidence for the final fixing of the texts, not one variant reading turned up! The six *Vedāṅgas* form the nearest equivalent to the Mediaeval European *trivium* (grammar, rhetoric, logic) and *quadrivium* (geometry, arithmetic, astronomy, music). Mental discipline and communication skills are primary goals of both the Indian and European curricula. The major difference appears to be this: the Western *quadrivium* was designed to train the mind by means of the study of abstract numbers and quantities, a pedagogy obviously in harmony with the Greek belief that numbers were things; the ultimate concerns of the *Vedāṅgas* were for more concrete matters—performance and the spoken word.

Nārada's *śikṣā* is about 50% music and 50% phonetics (if we use a modern definition of "music"), and the musical passages are a naive mixture of fact and myth. It contains information of tremendous value, including a passage which relates the degrees of the later secular scale to the degrees of the Vedic scale.<sup>8</sup> In another passage we learn that the peacock shrieks on the first scale degree, while the bull bellows on the second and the cuckoo whistles the fifth scale degrees!<sup>9</sup> But scattered among such fragments of musical folklore are several essential pieces of the ancient Indian pitch system, perhaps the earliest such discussion to survive. Some passages of this most important text may be later accretions, as some scholars have contended, but the central core must have been set down in Vedic times.

A second important strand of musical speculation is concerned with the theater of Gupta India (fourth through seventh centuries A.D.), of

which the plays of Bhāsa and Kālidāsa are representative. A substantial corpus of dramatic theory evolved during these centuries, and two musical genres were prescribed in very great detail for theatrical spectacles: *gāndharva* was a strict, ritual music for the opening ceremony of music and dance that dedicated the play to the appropriate patrons and deities, while *gāna* was a freer style of music that could be tailored to the various dramatic requirements of the performance. The treatises of Bharata and Dattila stressed the musical components and organization of *gāndharva*, although the former contains additional information on the less formal style of music. The word *gāndharva* is cognate with the Greek *kentauros* (centaur) and in later Vedic times was used to denote the class of handsome demi-gods, living in the sky and notorious for their seduction of women, who were regarded as the patrons of such diverse enterprises as oratory, music, and gambling. Their name is carried not only by this musical genre but by the third scale degree (GA) and the early scale built thereon that is practiced (as Nārada tells us) "only in heaven."<sup>10</sup> Both Bharata and Dattila set forth the theoretical system of *gāndharva* in quite remarkable detail, and all subsequent Indian music theory can be traced—in one way or another—to their model.

By the end of the first millennium music had become detached from its earlier ritual and theatrical contexts and was considered as an independent discipline, even if its venerable associations lingered. There are numerous classifications of the arts in Indian literature, frequently overlapping, seldom agreeing, and developed on obscure principles. Despite music's privileged status, it has no one identifiable niche, but more often than not was listed alongside "arts" that must be considered trivial by any standard. We find classifications such as the eighteen professional arts (*śilpas*) and the sixty-four *kalās* (which Coomaraswamy labels as "avocational arts"<sup>11</sup>) that Vātsyāyana enumerates in his famous *Kāmasūtra*: the latter range from major arts (such as singing, dancing, writing poetry, and architecture) to such pastimes as tattooing, cooking, reciting tongue-twisters, applying perfumes, teaching parrots to talk, speaking "Pig-Latin," gambling, and gymnastics.<sup>12</sup> Architecture, poetry, and music are usually cited as "major" arts, since they can be practiced independently, that is, sculpture and painting are dependent upon architecture for their existence, as dance is upon music.

Life, according to early Hindu tradition, has four ends: *dharma* (righteousness), *artha* (wealth), *kāma* (pleasure, especially through the senses), and *mokṣa* (liberation from the cycle of birth and rebirth and the consequences of *karma*). The arts in general have *kāma* as their immediate goal, and sensory gratification is as explicitly recognized and valued as an effect of art as is the perception of the spiritual reality

signified by the sensory illusion. And indeed all of the arts were valued for their assigned role in heightening sexual pleasure. But the ultimate goal of the musical experience was *mokṣa*, approached by means of two intermediate and more attainable stages of absorption in the musical process: *bhoga* (enjoyment) and *ānanda* (rapture).

Early Indian music theory, as will soon be evident, is distinguished by the same rigorous intellectual precision and keen observation that marks Pāṇini's great grammar of the Sanskrit language. At the same time it flourished amidst exotic surroundings with strong implications of cosmic symbolism and mysticism. The texts display some of the same naive blend of musical lore and technical information that we find in the Mediaeval European literature of *musica speculativa* and the same tendency to dwell on music's origins and effects. The boundaries of music were gradually defined, distinguishing it from speech, chant, poetry, ritual, and drama. Musical speculation was practiced not for its own sake but with a clear, practical goal: to insure accurate, effective performance that could be repeated in exact detail—and to this end we owe many of the complexities of the musical system, especially the mnemonic aids. Since the treatises had to be transmitted orally, authors resorted to the aphoristic *sūtra* style in order to present maximal information in minimal space. The literature is characterized by linguistic puzzles and cryptic codes, perhaps to protect trade secrets from the uninitiated. But hidden in the dense thicket of ambiguous technical terms and obscure syntax is an abundance of imaginative ideas and an incisive, systematic grasp of the musical principles with which early Indian authors gradually organized the mysterious realm of articulate sound.

## TOPICA

The musical systems of ancient India and Greece are set out in ways that invite comparisons. Each system is ordered by a set of clearly hierarchical topics that serve to divide the two major dimensions of pitch and time, as shown in Table 1. In this section we focus upon the gross anatomy of the two systems, by pointing out important similarities and differences in the stated topics and some of their consequences for the musical repertoires. It is useful to bear in mind that there can be unstated topics, properties of the music that are taken so much for granted that they are assumed, not defined.

The Indian and Greek musical repertoires also have some common features: both were basically ensemble musics designed for the theater, using physical gesture to regulate the music. Both trace their origins in part to ritual and liturgy and were influenced by the ceremonies, conventions, and styles of sacred chant. Both included some purely vocal

and some purely instrumental music, were used to accompany dancing, and both used the temporal patterns of speech and poetry as a model for musical rhythm.

Table 1 shows a number of similar strategies of thought in the Greek and Indian dissections of the pitch and temporal domains.<sup>13</sup> In each case there are very clear indications of hierarchical thinking, with each dimension built up from the minimal unit to basic patterns, larger structural groupings, and appropriate Gestalts. Each of the two systems attempts (with varying success) to conceptualize four extremely difficult issues for the early theory of music: tempo, the role of silence, change, and style. Each system, in its own way, stresses the *relative* function of the major components instead of defining their measurement or position in absolute terms, for example, the Greek interval ratios, genera, and the dynamic nomenclature for the *tonoi*, the various Indian beat gestures and the criteria for recognizing various types of phrases. India and Greece lacked the official standards of ancient China, set by bamboo tubes of prescribed height and scale and stone chimes of specific size; their systems had to be described in relativistic terms to remain operative in a musical world in which the only major constants were the range of the human voice, the length of the breath, the familiar rhythms of speech, simple motions of the body, the mutual relationships of numbers, and the facts of aural perception. Indeed it can be argued that music theory flourishes in the absence of precise standards and a common practice of composition. Finally, and most germane for the present paper, each of the two systems lays the foundation for an elaborate theory of melody.

Some of the differences are even more revealing: Greek authors obviously sought to apply the same set of principles to the organization of the domains of pitch and time, an ideal that has managed to elude theorists ever since. While there can be no such thing as a rhythmic *gamut* (in terms of scale), the remaining categories are remarkably parallel. On the Indian side of the Table, we find virtually no similarity between the domains of *svara* and *tāla* other than the general progression from small to large categories and from the specific to the general. Most obviously the Indian authors preferred a larger number of categories, with the consequent potential for overlapping and ambiguity so characteristic of Indian thought.

While both systems are hierarchical, I would describe the Greek system as a fairly steep hierarchy: multi-leveled, one or few units on each level, and integrated by the incidence of similar number proportions in the various structural levels. In contrast, the Indian hierarchy is rather flat: fewer levels, many units within each level with much overlapping of function, and little relationship between adjacent levels. These differences are more apparent in the temporal organization of

TABLE 1A: THE TOPICS OF PITCH

GREEK: <i>Harmonics</i>	INDIAN: <i>Svara</i>
1. <i>phthongos</i> , note	1. <i>svara</i> , note, tone
2. <i>diastema</i> , interval	2. <i>grāma</i> , the basic scales
3. <i>genos</i> , genus, tunings	3. <i>mūrccchanā</i> , their modes
4. <i>systema</i> , system, scale	4. <i>tāna</i> , deficient <i>mūrccchanās</i>
5. <i>tonos</i> , key	5. <i>sthāna</i> , register
6. <i>metabole</i> , modulation	6. <i>vṛtti</i> , style, mode of performance
7. <i>melopoeia</i> , melodic composition	7. <i>śuṣka</i> , purely instrumental music
	8. <i>sādhāraṇa</i> , intermediate notes, altered notes
	9. <i>varṇa</i> , the 4 basic melodic progressions
	10. <i>alanṅkāra</i> , graces, ornaments
	11. <i>dhātu</i> , the various instrumental strokes
	12. <i>śruti</i> , intonation in general, the 22 octave divisions, microtones
	13. <i>jāti</i> , the 18 proto-melody types: 7 pure, 11 modified

TABLE 1B: THE TOPICS OF TIME

GREEK: <i>Rhythmics</i>	INDIAN: <i>Tāla</i>
1. <i>chronos protos</i> , the basic duration	1. <i>kalā</i> , a silent and visible beat
2. <i>pous</i> , the rhythmic foot	2. <i>pāta</i> , a sounding beat
(3.) <i>genos</i> , genus, proportion	3. <i>laya</i> , space between beats, "tempo"
(4.) <i>kenoi chronoi</i> , rests	4. <i>yati</i> , the law of regulation
5. <i>agoge rhythmike</i> , rhythmic progression	5. <i>pāṇi</i> , the law of phasing, when to enter
6. <i>metabole rhythmike</i> , rhythmic modulation	6. <i>pādabhāga</i> , one phrase of a group of four
7. <i>rhythmopoeia</i> , rhythmic composition	7. <i>mātrā</i> , another type of phrase, a time duration
	8. <i>parivarta</i> , repetition
	9. <i>vidārī</i> , a phrase marked by a pause or cadence
	10. <i>aṅga</i> , a section of several phrases
	11. <i>vastu</i> , a longer type of section
	12. <i>prakāraṇa</i> , the seven fixed forms
	13. <i>avayava</i> , expansions or contractions of these forms by the interpolation or deletion of beats
	14. <i>gīti</i> , treatment of text, style
	15. <i>mārga</i> , relative time density, standard pattern length

the two musics, and I would like to suggest that such preferences for certain types of hierarchies express well-established cultural models. I suspect that a culture tends to organize its music in the same way it organizes its social structures; "flow charts" of modern Asian and Western businesses reveal similar sets of differences in the basic pattern of organization.

Cultural theories of form and substance underlie other major differences between the two systems: to the Greeks numbers were things, and number proportions held the universe together. The forms signified by these proportions were persistent; rhythmic patterns, for example, retained their indigenous accents when appearing in different contexts. In the Indian worldview substance is an illusion, and all forms are fluid; melodic and rhythmic patterns easily took on new tonal functions and accents, thus accounting for the abundance of superimposed patterns in Indian music. While both cultures found it necessary to objectify musical phenomena in the form of hand gestures, the Greek *arsis* and *thesis*, and regions of voice, I suggest that both the musical experience and the musical principles embodied therein enjoyed greater ontic status in Indian thought than in the shadowy Greek world of abstract numbers and forms.

Cultural preferences must be regarded as causal factors in the organization of a musical system—we think in categories that our culture has trained us to like, just as we think that which our language allows us to express. For the musician as for the anthropologist "culture" is a grid that shapes both our perception of and preferences for experience. Westerners share preferences for definite beginnings, straight lines, increasing tension, definite goals, a certain amount of conflict, a pleasantly-textured surface, sonorous tone, parts that relate proportionately to wholes, clear functions, and the like. Many of these preferences have evolved gradually through the more dynamic development of Western society, but they are completely in harmony with the principles of ancient Greek art. Indians like indefinite beginnings, circular and spiral designs, ambiguous function, abundant ornamentation, organic development, an intensely-saturated field, reticulated patterns, the concurrence and confluence of divergent strands, and an entirely different brand of teleology. This set of cultural preferences was firmly established in Indian art by the time their musical system was set down and is clearly revealed in the basic organization of the system and the specific principles for constructing a melody.

I will mention five other specific differences that reveal major gaps between early Indian and Greek musical thought:

1. There are no Indian equivalents to the concepts of modulation and key, no "change of place." The contrast is between a stable system (Indian) and a mobile one (Greek), "fixed do" as opposed to "movable do."

2. Similarly, there is no precise Indian equivalent to the concepts of interval and genus. Within the Indian pitch system, the relative position of one component to another was assumed, and greater stress was placed on the relative position of that component within the system as a whole. Lannoy describes this as a “unified field awareness” that he finds typical of Indian culture.<sup>14</sup> *Svaras* could be consonant, dissonant, or neutral to one another, but the interval thus formed could not be defined other than by the number of *śrutis* it included. It had no separate identity. The Greek concept of interval was one of their most brilliant achievements and served a variety of functional roles, for example, its size, consonance or dissonance, composite or incomposite.

3. The principal topics for *Harmonics* and *Rhythmics* furnish no clues as to the resulting musical style; style as such arose only in the sub-topics of *melopoeia* and *rhythmopoeia* and in the separate discussions of *ethos*. But in the Indian system style is explicitly defined by means of the correlation of various major topics.<sup>15</sup> From these correlations we can infer (in addition to the inevitable “moderate” style) the existence in early India of two styles familiar in Indian music today: *citra*, an exciting style modeled upon instrumental technique, featuring word repetitions, a persistent fast tempo, short phrases, frequent syncopations, and irregular accents; and *dakṣiṇa*, a slow and expressive vocal style, appropriate for an opening *ālāpaṇa* improvisation, with prolonged syllables, a slow pulse, extended phrases, and expressive deviation from the beat.

4. The Indian theorists set down a more fully-developed theory of musical structure than their Greek counterparts, who relied on the structures of formal poetry. The seven Indian *gītaka* forms are probably the oldest musical structures to be substantially independent of the principles of prosody. These were large, fixed, modular forms specified down to the individual beat, showing few traces of the later cyclical patterns that served (and still serve today) as frameworks for improvisation.<sup>16</sup>

5. The *word* does not play an important role in Greek musical speculation. Although *rhythmics* and *metrics* were considered two of the three main divisions of music and shared the same patterns, their domains were kept quite separate. And none of the stated topics of *harmonics* or *rhythmics* was in any way dependent upon text considerations. In early Indian musical thought *pada* (word) was similarly one of the three main divisions of music, along with *svara* and *tāla*, but several of the main topics in the latter domains could only be defined by means of the text. Indian melodic theory is obviously more word-conscious.

There are other characteristic differences: the Greeks stressed perception, the Indians did not. While both groups of authors seem obsessed at times with such technical matters as assigning names, taking up topics

in their proper order, and enumerating all possibilities, their general approach to the subdivision of a topic is somewhat different: the Greeks analyzed a topic by means of its *differences*, that is, how an interval or a rhythmic foot might differ from another—in magnitude, in composition, in structure, in genus, whether rational or irrational, and the like. Indian authors outlined a topic in terms of its *lakṣaṇas* (characteristics), its *guṇas* (qualities), its *aṅgas* (“limbs,” components), and various other sets of attributes. The Greek strategy resulted in a kind of intellectual dissection that aligned all possible variants within the system in mutually-exclusive groupings; the Indian strategy was to list a large number of positive (sometimes overlapping) attributes for each topic, then to subdivide each of these in the same manner, but generally avoiding a clear “either/or.”

### THE THEORY OF MELODY

Early melodic theory survives in the form of little more than a framework of ideas, although these ideas point clearly in certain directions and give some indication of the elaborate nature of this branch of ancient musical thought. It will be useful here to make a basic distinction between “precompositional” and “compositional” melodic theory: by these terms we mean (a) melody as available *gamut* and (b) melody as *pathway*, the particular choices one is allowed to make from the established gamut. In Greek and Indian treatises both of these aspects of the theory of melody are highly prescriptive, and we may take both “composition” and “performance” (whether improvised or not) to mean the arrangement of *authorized* patterns in accordance with the general guidelines of the system.

In the Greek scheme *melopoeia* (usually translated as “melodic composition”) is the final topic in the domain of *harmonics*. The available gamut is laid down in the previous harmonic topics, so it remains for *melopoeia* to outline the various compositional options.<sup>17</sup> Similarly, *rhythmopoeia* is placed as the final topic of *rhythmics*, and its subtopics are the same as those of *melopoeia*. It is unfortunate for our purpose that these sections are treated only superficially or are among the missing portions of the surviving texts. Figure 1 summarizes the divisions of *melopoeia*:<sup>18</sup>

We should note in passing that, due to the essentially monophonic nature of Indian music, the Sanskrit language contains no specific word for “melody,” as opposed to “song” or even “music.” But, in contrast to the sketchy set of options for *melopoeia*, much more of the early Indian theory of melody remains intact. The relevant topics are found in the domain of *svara*, although, as we have pointed out, the final delineation of style was accomplished by correlating the melodic

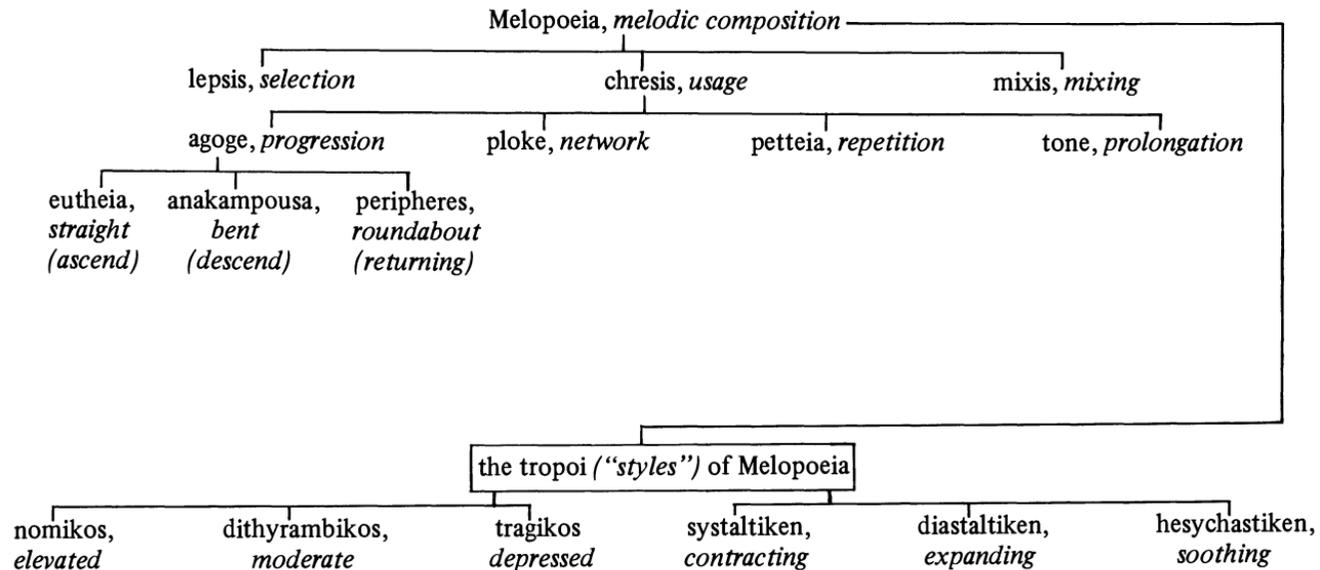


Figure 1. The Theory of Melody

product with various characteristics of *tāla*.<sup>19</sup> In the formal lists of *svara* topics as given by Bharata and Dattila, we find no clear separation of the compositional and precompositional; Table 2 makes such a separation and reorders the appropriate topics in what to us seems a more logical sequence.<sup>20</sup>

The topics listed in the left column provide for a three-octave scale with specific degree names, yet flexible enough to be divided and inflected in a variety of ways and devoid of any implications for such things as tonal emphasis, boundaries, registers, or idiomatic patterns. Like the Indian concept of matter, the melodic gamut was a neutral, undifferentiated field; it could be marked off for convenience with the sol-fa *svara* names [SA, RI, GA, MA, PA, DHA, NI] and in selected intonations, but these could be exchanged as easily as one erases chalk-lines from a blackboard or moves the frets on a *sitār*. There were two main *grāmas*, diatonic scales from D and G, plus a hypothetical third scale from E.<sup>21</sup> The *mūrchanās* were formed by mechanical rotation through the scale degrees and seem to have carried no functional implications; if rendered in hexatonic or pentatonic versions, these became the *tānas*. *Sādhāraṇa* provided for two intermediate “chromatic” tones, each produced by raising the appropriate *svara* by two *śrutis*.<sup>22</sup> This Indian equivalent of *musica ficta* was limited to the *svaras* GA and NI:

<u>Svara Name</u>	<u>Equivalent to</u>
<i>antara</i> GA	F#, treated as a “leading tone” of MA (G)
<i>kākali</i> NI	C#, treated as a “leading tone” of SA (D)

The topics in the right column of Table 2, as amplified by their divisions and subdivisions, set out a comprehensive theory of melodic composition that (a) builds on the established melodic gamut, (b) describes a repertoire of eighteen authorized melody-types, (c) states the options for melodic motion within phrase units, (d) establishes certain melodic functions, (e) provides an elaborate assortment of melodic ornaments, and (f) shows how all of these ingredients may be combined so as to result in certain approved musical styles.

The most vital choices are those which direct the course of a melody into one of the prescribed *jātis*, the ancestors of the modern concept of *rāga*. The word *jāti* is one of those bland words so useful in musical terminology; it is a past passive participle of the verbal root *jan* [cognate with the Greek word *genesis*] meaning “to be born, arise,” and thus its developed meaning: “kind, type, species.” A glance at the standard ten characteristics of *jāti* discloses most of the familiar standards by which a mode is recognized in Mediaeval Western theory—incipit, final, confinal, and ambitus (high and low):<sup>23</sup>

TABLE 2

Precompositional Topics	Compositional Topics
<p>12 <i>śruti</i>, intonation, microtones</p> <p>1 <i>svara</i>, note, tone</p> <p>2 <i>grāma</i>, scale</p> <p>3 <i>mūrccchanā</i>, modes</p> <p>4 <i>tāna</i>, deficient <i>mūrccchanās</i></p> <p>5 <i>sthāna</i>, register</p> <p>8 <i>sādhāraṇa</i>, altered tones</p>	<p>13 <i>jāti</i>, proto-melody types</p> <p>- <i>vādi</i>, "sonance," a subtopic of <i>grāma</i></p> <p>9 <i>varṇa</i>, basic progressions</p> <p>10 <i>alamkāra</i>, ornaments</p> <p>6 <i>vṛtti</i>, style</p>

1. *graha*, initial
2. *aṁśa*, prominent, usually called “sonant” by Indian authors
3. *tāra*, high
4. *mandra*, low
5. *ṣāḍava*, hexatonic
6. *auḍuvita*, pentatonic
7. *alpatva*, scarce, weak
8. *bahutva*, copious
9. *nyāsa*, final
10. *apanyāsa*, confinal, an internal cadence tone

There were obviously numerous possibilities for producing varying degrees of tonal emphasis and distinguishing one *jāti* from another. Indian authors were fond of enumerating aggregates for pedagogical purposes, and their figures are revealing: for the eighteen *jātis*, there were twenty-one possible finals, fifty-six confinals, sixty-three initials, and sixty-three sonants!<sup>24</sup> No such enumerations were given for copious or scarce *svaras*. It is not surprising that initial, sonant, and final coincided at times, but their functions were clearly separate. *Nyāsa* (literally, “to sit down on”) signifies final, consummation, and rest but with no implications for profusion or any kind of control over the remaining tones. *Bahutva* (“muchness”) implied no more than copious use. *Aṁśa* (sonant) comes the closest to the Western concept of “tonic” and seems to have more in common with the initial than the final;<sup>25</sup> although *aṁśa* and *graha* are defined as separate functions, they are the identical tone in all but one of the *jātis*.<sup>26</sup> Apparently tonal ambiguity was less to be tolerated at the beginning than at the end!

*Aṁśa*, according to the *Nāṭyaśāstra*, had its own list of ten *lakṣaṇas*: it is the generating tone, it determines not only the low tone but the interval between low and high tones, it is the tone most frequently heard, it determines the initial, the final, the three types of confinals, and is the tone which all the others follow.<sup>27</sup> *Aṁśa*, one gathers, is no trivial concept!

*Apanyāsa* signifies a strong degree that could be used for cadences on interior phrases. Bharata mentions two other types of confinals: *sanyāsa*, which could not be dissonant to the *aṁśa* and which was used as the cadential tone in the first phrase, and *vinyāsa*, a tone placed at the end of a single word within a phrase and which could be either consonant or neutral to the *aṁśa*.<sup>28</sup>

The other *jāti-lakṣaṇas* were not as complex: certain of the *jātis* were restricted in range, but the general principle limited movement in the low octave to one of the strong degrees or the tone below the final; movement in the high octave was not allowed beyond the fifth tone above the sonant. Certain of the *jātis* could only be performed in their

full, heptatonic form, but others were permissible in hexatonic and pentatonic versions (when the note or notes to be dropped were not those vital notes consonant with the *aṁśā*). *Bahutva* and *alpatva* could be effected in a number of ways, apart from mere statistical presence in a melody: emphasis resulted not only from prolongation or repetition but from using a tone as a turning point or the extremity of a melodic figuration; deemphasis, similarly, resulted from a lack of repetition and progressing directly over the tone to be slighted.

Later authors added an intriguing concept, *antaramārga* ("internal path").<sup>29</sup> Many hints are dropped in the various texts, but nowhere do we find very specific information on this most important subject. It obviously involved the correct application of the *lakṣaṇas* prescribed for an individual *jāti*; it is also said by various authors to involve certain tonal pairings which were emphasized in a back-and-forth motion, *sañcāra*. The result must have been similar to what today is called the *calan* of a *rāga*, a deeply-etched individual path and a set of idiomatic melodic patterns that distinguished one *jāti* from all others. We will return to the idea of *antaramārga*.

*Vādi* or "sonance" is treated formally as a subtopic of *grāma* (scale), but the concept first becomes operational when applied to the structure of an individual *jāti*.<sup>30</sup> Here are the four possibilities:

1. *vādi*, sonant, "ruling note" (*aṁśā*)
2. *saṁvādi*, consonant, harmonic affinity
3. *vivādi*, dissonant, distorted
4. *anuvādi*, neutral

The commentator Abhinava quotes an old analogy: "*Vādi* is the king, *saṁvādi* is the minister who follows him, *vivādi* is like the enemy and should be sparingly employed, *anuvādi* denotes the retinue of followers."<sup>31</sup> Like most analogies, this one is dangerous to push too far! While the sonant is clearly identified with the *aṁśā* and serves as a fixed point of tonal reference for a *jāti*, according to the principal authors, the remaining tonal relationships are defined as reciprocal relationships between note-pairs. *Samvādi* (consonant) affinity existed between pairs either nine or thirteen *śrutis* apart, intervals equivalent to the perfect fourth and perfect fifth. This relationship entailed important consequences for range, structure, and "fullness" of a *jāti*, in that the note which is consonant with the sonant could neither be dropped nor deemphasized, thus setting up a kind of dominant/tonic axis; it further served as a natural limit of motion in the high and low octaves. An interesting complication is that consonant affinities existed between other note-pairs and presumably influenced the melodic motion in some other, unspecified ways. Dissonant note-pairs were two *śrutis* apart, a "half-step" that varied somewhat in size in the Indian nontempered

system of tuning; today the term signifies a foreign note in a *rāga*. *Anuvādis* were neutral in function and thus were not subject to any stated constraints.

Thus far we have been discussing highly functional aspects of the theory of melody. The topics *varṇa* (basic progressions) and *alamkāra* (ornaments) were more neutral in that they were not prescribed for any of the individual *jātis* and could be widely employed in different melodic contexts. *Varṇa* is to *alamkāra* what structure is to decoration, and both were reckoned on the basis of text units. The list of four *varṇas* is reminiscent of the divisions of the Greek topic *agoge*:<sup>32</sup>

1. *sthāyī*, stable
2. *sañcārī*, wandering, back-and-forth
3. *ārohī*, ascending
4. *avarohī*, descending

There is probably no precise distinction to be made between *varṇa* and *alamkāra*, although any Indian musician can improvise typical examples; the terms are as elusive to define as "motive" and "gesture." *Varṇa* (appearance, color, word, syllable) is clearly the larger unit and indicates the general direction of the melodic line. The *alamkāras* were melodic flourishes or graces that were, in certain cases, associated with certain *varṇas* or which could occur in the middle of an established *varṇa*. The list of thirteen *alamkāras* which follows is Dattila's abbreviated list;<sup>33</sup> the *Nāṭyaśāstra* enumerates thirty-three *alamkāras*,<sup>34</sup> and later lists go as high as eighty-eight. Indian scholars today speculate that certain combinations of progressions and ornaments were specific to certain *jātis*, but the texts yield no supporting evidence for this claim. One can only assume that such matters were reserved for the *guru/śiṣya* tradition of oral instruction on which the transmission of the Indian musical system still largely depends. Dattila's list is as follows:

1. *prasannādi*, begins with low note
2. *prasannānta*, ends with low note
3. *prasannamadhya*, low note in the middle
4. *prasannādyanta*, begins and ends with low note
5. *bindu*, higher note touched like lightning
6. *nivr̥tta-pravr̥tta*, lower note touched quickly
7. *preñkholita*, even swing between two notes
8. *tāra-mandra-prasanna*, gradual rise followed by sudden drop
9. *mandra-tāra-prasanna*, sudden rise followed by gradual descent
10. *sama*, even ascent and/or descent
11. *kampita*, quiver in low register
12. *harita*, quiver in middle register
13. *recita*, quiver in high register

Of all the Indian cultural preferences expressed in the musical system (some in the domain of pitch, others in the temporal dimension), none is more evident than this addiction to ornamentation. Bharata, in a famous verse, states that "A song without any *alamkāra* will be like a night without moon, a river without water, a vine without a flower, and a woman without any ornament."<sup>35</sup> It is true that an Indian woman feels undressed without some ornament, and one can point to other relevant cultural ideas such as the heavy role of spices in Indian cuisine and the absence of a concept of "natural beauty." The word *alamkāra* means literally "to make sufficient," clearly implying that ornamentation is a vital aspect of the artistic process—not mere frosting on the cake. The theory of music, just as eloquently as architecture and sculpture, tells us that structure and decoration joined to form a concept as basic to Indian art as it was secondary in Greek art.

The lists of ornaments reveal typically Indian decorative patterns: arabesques, circles and spirals, and reticulated lines. While many of the listed ornaments are similar to some of the *gamakas* in modern Indian music, others form larger melodic units that Nijenhuis compares to the melismatic *Blumen* or melodic "garlands" of Mediaeval German song.<sup>36</sup> The common factor was their conception as ornament, not the length of the unit. *Bindu* and *nivr̥tta-pravr̥tta* are commonly employed in Indian singing today and are practiced in systematic exercises by every beginning student; when performed at "lightning" speed, they are responsible for the highly articulated, "textured" style of melismatic singing used for virtuoso *passaggi*. We may note also (in *kampita*, *harita*, and *recita*) the survival of vibrato as an ornament from older traditions of Vedic chant.

To conclude this discussion in as concrete a way as possible, I wish to present the gamut and minimal conditions for two of the major *jātis*. *Ṣād̥jī* is one (perhaps the most important one) of the seven pure *jātis*; its name indicates its derivation from the *ṣad̥ja-grāma*, and it is equivalent to the ecclesiastical Dorian mode in more than superficial aspects of its structure. Its gamut is as follows:



The basic conditions are these: (1) all seven degrees must be used, (2) the final is on SA in the low octave, (3) SA is also the initial, con-final, and sonant, (4) *ṣād̥jī* may appear in hexatonic form by dropping NI,<sup>37</sup> but (5) it cannot appear in pentatonic form. The major variables are (6) all degrees except NI and RI are potential sonants,<sup>38</sup> (7) GA and

PA are acceptable confinals, (8) typical of this *jāti* is *saṅgati* (association) between SA and GA, also SA and DHA—apparently part of the “internal path.”<sup>39</sup> Bharata adds that (9) NI and RI are scarce, while (10) GA is copious.<sup>40</sup> The later author Maṭaṅga states further that (11) only the lowest five notes of the high octave may be used, and (12) that this *jāti*'s emotional affect is appropriate for three of the *rasas*: *vīra*, the heroic; *raudra*, the furious; and *adbhuta*, the wondrous. And the thirteenth-century *Samgītaratnākara* adds that (13) *kākali* NI [c#] may be used in the heptatonic form, (14) if the sonant is GA, NI cannot be omitted, and (15) this *jāti* is traditionally used for the exit song in the first act of a play.

There can be no conceivable reason why this set of melodic prescriptions should have *anything* in common with the Mediaeval Dorian—unless we admit the possibility of certain instinctive (and perhaps “universal”) tendencies, such as the stabilizing influence of perfect intervals and the desire to cadence by small melodic intervals. So with the appropriate amount of suspicion for cross-cultural coincidence, it is still striking to note these structural features: a clear tonic/dominant axis, oscillating movement around the final, deemphasis of degrees 2 and 7, copiousness of the third degree, the limitation of range to the fifth degree in the high octave, the optional *musica ficta* leading tone, and the rather sober ethos prescribed.

By way of contrast, *Nandayantī* (“bringing joy”) is a mixed *jāti*.<sup>41</sup> It was held in very high esteem, and Abhinava quotes an old saying that “the *jāti* *Nandayantī*, performed even once in accordance with the injunctions governing its forms, can expiate the supreme sin of having murdered a Brahman.”<sup>42</sup> Its gamut is as follows:



*Nandayantī* was the only *jāti* in which the sonant and initial were not the same *svara*. Its conditions are (1) GA is the initial, (2) GA is the final, (3) PA is the sonant, (4) MA and PA are the confinals, (5) it may become hexatonic by dropping SA, but (6) a pentatonic version is not possible, (7) low RI is used copiously (!), (8) the upper octave may not proceed beyond SA, (9) it is related in structure to four other *jātis*<sup>43</sup> but does not share their idiomatic patterns, and (10) the appropriate *rasas* are *śṛṅgāra*, the erotic; *hāsyā*, the comic; and *karuṇa*, the pathetic.

*Nandayantī* has little in common with the Western Lydian, more perhaps in common with the sixth of the reciting tones for Roman

psalmody. Semitones (4/5 and 7/8) are obviously vital to the expression of this *jāti*, since RI is used copiously and DHA may not be dropped; perhaps this helps to account for the more exotic ethos of *Nandayantī*, an ancestor of the more emotionally expressive evening *rāgas*. The significance of separating the initial and sonant is not clear, especially since *Nandayantī* is unique in this respect. Like some of the other mixed *jātis*, *Nandayantī* has but one possible sonant; its conditions are thus more specific than those governing *śāḍjī*. So even among this set of early melody-types we can observe a distinction between (a) *jātis* that allow for variable tonal emphasis, and (b) *jātis* with a single prescribed tonal focus.

\* \* \*

Most musicians realize instinctively that the simplest phenomena require the most profound explanations, and this is perhaps why the theory of music reveals a persistent tendency to approach the most basic questions in extremely complex ways. A great teacher once said that most questions in musical analysis reduce to one of these two: "What is it?" and "What's it doing here?" The essential tasks for early music theory were the differentiation of various sound phenomena and the assignment of meaning in terms of *identity* and *function*. Precisely these were the immediate goals of ancient Indian music theory and hence the emphasis on giving names and drawing distinctions between one component and another, or between one melodic pattern and another.

The separation and naming of components is one of the more primitive tasks of a musical system, but assigning meaning is a higher achievement. We have seen that Indian authors cultivated a certain ambiguity in musical function, just as the Greek authors strove to minimize ambiguity. But apart from such basic preferences, musical meaning arises at different stages in the two systems: most of the Greek melodic theory is precompositional, and melodic function (in terms of the *thetic* and *dynamic* roles of the scale degrees) is built into the gamut itself, not reserved for the individual melody; *melopoeia* has no functional terminology. In Indian musical speculation, function arises only when melody becomes specific; the topics that outline the melodic gamut are virtually devoid of functional implications. Thus,

<u>Greek</u>	<u>Indian</u>
functional gamut	nonfunctional, neutral gamut
neutral composition	function arises <i>through</i> composition

One can only speculate why this is so. One of the primary causes must have been the differing requirements of a mobile system (Greek)

with a sliding scale of degree functions and a concept of modulation in contrast to a stable system (Indian) in which the scale degree was a more neutral concept. The idea of music was obviously freer in India—perhaps even then largely improvised—and, as Deva argues, function may have been expressed more in terms of a *local* relationship among members of a small pitch set, or of an individual melody, than in terms of a *global* relationship among the members of a whole system or which governed an entire repertoire of melodies.<sup>44</sup> Function in ancient Greek music, no matter how it evolved, is expressed in such global terms and is clearly an intellectual *tour de force*; its relationship to the repertoire is not known. In the prescriptions for the *jātis* we can see the development of certain basic specialized tonal functions: what Szabolcsi calls the “ground tone” and the “pivotal tone,” as well as an array of other specific melodic functions.<sup>45</sup>

Ancient music theory may be viewed as the record of two parallel evolutionary processes—the evolution of a system and the evolution of a repertoire. In any single treatise we may find musical concepts and descriptions of actual pieces embedded like fossils in a layer of rock. The early Indian theory of melody may be read for such traces, although many blanks remain to be filled in. The melodic gamut of early India tells us next to nothing about the repertoire, but it is a highly informative record of the progress of the system. It had evolved into a true diatonic system of great sophistication with many permutational techniques; it shows only faint traces of its prehistoric evolution—no specific evidence of upward or downward generation, formation from melodic kernels or nuclei, chains of intervals, downward “cascades,” and similar generative processes that *are* clearly visible in the structure of the older Vedic scale.

The theory of melodic composition, as prescribed for the *jātis*, reveals traces of several stages in the development of the musical repertoire: (1) a fairly primitive stage in which the concept of melody is scarcely differentiated from the gamut itself, (2) a set of proto-melody types (such as *ṣādḥī*) that appear to have controlled a repertoire larger than the individual tune, (3) more specific formulae (such as *Nandayantī*) with sharply individual characteristics, parents of the more recent *rāgas*, and (4) a small collection of musical styles in which various melodies could be sung.

Before the theory of melody could demonstrate any convincing relationship to this evolving repertoire, theorists had to find a means of objectifying the referential set of “grooves” into which acceptable melodies fell and which underlie such concepts as mode, *maqam*, and *rāga*. Perhaps the most admirable achievement of early Indian melodic theory was the definition of melodic path against the background of the established musical gamut, explicitly and brilliantly realized in the theory of *jāti* and such ideas as *antaramārga*.

If these concepts have any analogue in the music of ancient Greece, it is the *nomoi* (literally, “laws”). Although the *nomoi* are frequently mentioned in Greek literature, their musical characteristics remain a mystery, and they take no part in the theory of *melopoeia*.<sup>46</sup> The surviving fragments of the Greek theory of melody serve more to outline melodic options than to record the repertoire; nowhere do we find such concepts as melodic path or the description of specific melody types. Perhaps this helps to explain the enormous confusion that has accompanied the application of the conceptual framework of Greek theory to various foreign melodic repertoires in the Middle Ages. If, as some have claimed, the Greek musical system is the result of a systematic codifying of the properties of a repertoire, the process is by now quite impossible to trace. This void enhances the value of the Indian theory of melody, in which successive stages lie open to our view and detail some of the vital early steps in the formation of a music.



## NOTES

1. See Walter Kaufman, *Musical References in the Chinese Classics* (Detroit: Information Coordinators, 1976) and two works by Babette Minnie Becker, "Music in the Life of Ancient China as Reflected in the Ceremonial Books: The I Li, the Chou Li, the Li Chi" (M.A. thesis, University of Chicago, 1954) and "Music in the Life of Ancient China: From 1400 B.C. to 300 B.C." (Ph.D. dissertation, University of Chicago, 1957).
2. Hereinafter N. For a study of this treatise see Lewis Rowell, "A *Śikṣā* for the Twiceborn," *Asian Music* 9/1 (1977): 72-94. The only available edition is Nārada, *Nāradyā Śikṣā*, with the commentary *Śikṣāvivarāṇopeta* by Bhaṭṭaśobhākara (Datia: Sri Pitambarapitha Sanskrit Society, 1934).
3. Hereinafter B. The most reliable of the many editions is Bharata, *Nāṭyaśāstra*, with the commentary *Abhinavabhāratī* by Abhinavagupta, ed. M. Ramakrishna Kavi and J.S. Pade, 4 vols., Gaekwad's Oriental Series No. 36, 68, 124, 145 (Baroda: Oriental Institute, 1926, 1934, 1954, 1964). For an English translation see *The Nāṭyaśāstra*, trans. Manomohan Ghosh, 2 vols. (Calcutta: The Asiatic Society, 1951, 1961).
4. Hereinafter D. For the text and an excellent English translation see Mukund Lath, *A Study of Dattilam* (New Delhi: Impex India, 1978).
5. See Note 3.
6. Although the roots of this doctrine are extremely ancient, it was first articulated in Maṅgala's *Bṛhaddeśī* (8th century?).
7. For more details see Rowell, "A *Śikṣā*."
8. N 1, 5, 1-2.
9. N 1, 5, 3-4.
10. N 1, 2, 7.
11. Ananda K. Coomaraswamy, "The Theory of Art in Asia," in *Aesthetics Today*, ed. Morris Philipson (New York: World, 1961), p. 36.
12. Vatsyayana, *The Kama Sutra*, trans. Sir Richard Burton and F. F. Arbuthnot (St Albans: Panther, 1963), pp. 20-23.
13. One finds some variation in the order of pitch topics from text to text. This list is taken from Cleonides, "Harmonic Introduction," in *Source Readings in Music History*, ed. Oliver Strunk (New York: W. W. Norton, 1950), p. 35, and B 28, 13-14. D 6-7 begins with *śruti*, omits *dhātu*, and inserts *jāti* after *sādhāraṇa*. The list of rhythmic topics is that found in Aristides Quintilianus, *De Musica Libri Tres*, ed. R. P. Winnington-Ingram (Leipzig: B. G. Teubner, 1963), pp. 31-40. The lists of *tāla* topics given in B 28, 20 and D 110-112 vary wildly, and B treats each of the eight *tāla* beats as a separate topic.
14. Richard Lannoy, *The Speaking Tree: A Study of Indian Culture and Society* (London: Oxford University Press, 1971), p. 278.
15. The most complete version of such correlations appears in the 13th-century *Saṅgītaratnākara* of Śārṅgadeva, Book 6, verses 165-170:

<i>Vṛtti</i> , style:	<i>Citra</i>	<i>Vṛtti</i>	<i>Dakṣiṇa</i>
	instrumental dominates	equal blend	song dominates
<i>Laya</i> , tempo:	fast	moderate	slow
<i>Yati</i> , regulated flow of tempo:	even tempo	accelerating	decelerating
<i>Pāṇi</i> , phasing:	accenting after the beat	metrical accents	anticipating the beat
Mode of <i>tāla</i> :	one-beat units	two-beat units	four-beat units
<i>Gīti</i> , treatment of texts:	frequent word repetitions	many short syllables	many long syllables
<i>Mārga</i> , standard pattern length	2 <i>mātrās</i>	4 <i>mātrās</i>	8 <i>mātrās</i>

16. The *gītakas* are described in B 31 and D 155-222.
17. See Table 1A, topics 1-5.
18. See Aristides Quintilianus, *De Musica*, pp. 28-31.
19. See Note 15.
20. See Note 13.
21. Although Indians routinely translate *grāma* as "scale," the term should be understood in its broadest sense as a pitch "collection" indexed on or around a particular tonal referent. For a particularly lucid explanation of the problem see Harold S. Powers, "An historical and comparative approach to the classification of ragas (with an appendix on ancient Indian tunings)," in *Selected Reports*, vol. I, no. 3 (U.C.L.A. Institute of Ethnomusicology, 1970), pp. 1-78, especially pp. 59-63.
22. Efforts to establish the exact size of the *śrutis* have so far failed to convince most scholars.
23. B 28, 66 and D 55-62.
24. B 28, 79-91 and D 90-91.
25. The etymology of *aṁśa* illustrates a typical Sanskrit semantic twist in the development of a specialized technical meaning: the basic meaning is "a share or portion of anything, the denominator of a fraction, a degree of latitude or longitude," but in its application to the *svaras*, *aṁśa* has evolved to mean "that which divides" or "the principle by which a thing is divided."
26. *Nandayantī*, see below.
27. B 28, 68-69.
28. B 28, 73.
29. Both B and D refer to *antaramārga* but do not define the term.
30. B 28, 23-25 and D 18-19.
31. Commentary on B 28, 24.
32. B 29, 15-16 and D 97-99.
33. D 99-108.
34. B 29, 20-45.
35. B 29, 45.
36. E. Wiersma-Te Nijenhuis, *Dattilam: A Compendium of Ancient Indian Music* (Leiden: E. J. Brill, 1970), p. 314.
37. One assumes that this variant appears by license since it contradicts the first prescription.
38. The contradiction of (3) has not been adequately explained.

39. D 63-64.
40. B 28, 97.
41. D 85-86.
42. Commentary on B 28, 9-10.
43. *pañcamī, āṛṣabhī, gāndhārī, and andhrī.*
44. B. Chaitanya Deva, *Psychoacoustics of Music and Speech* (Madras: The Music Academy, 1967), p. 67.
45. Bence Szabolcsi, *A History of Melody* (London: Barrie and Rockliff, 1965), p. 37.
46. See Solon Michaelides, *The Music of Ancient Greece: An Encyclopedia* (London: Faber and Faber, 1978). pp. 222-223.

