MUSIC

A N D

MUSICAL THOUGHT

I N

EARLY INDIA

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EIGHT

TIME

The vision of time varies according to whether time is regarded as power, the Self, or a divinity. In a state of ignorance [time] is the first thing to manifest itself, but in the state of wisdom it disappears.

Bhartṛhari, *Vākyapadīya* 3.9.62 [1]

Whoever reverences Time as Brahma, from him time withdraws afar. For thus has it been said:—

From Time flow forth created things.
From Time, too, they advance to growth.
In Time, too, they do disappear.
Time is a form and formless too.

There are, assuredly, two forms of Brahma: Time and the Timeless. That which is prior to the sun is the Timeless (*a-kāla*), without parts (*a-kala*). But that which begins with the sun is Time, which has parts.

Maitri Upaniṣad 6.14–15 [2]

8.1 INTRODUCTION

Time has been and continues to be one of the central issues and perennial puzzles of natural philosophy. The epigraph from Bhartṛhari's fifth-century treatise on grammar and the philosophy of language does not exhaust the full range of imagery with which the ideas of time and timelessness have been grasped in ancient Indian literature, but it provides an appropriate introduction to the main lines of thinking to be explored in this chapter and chapter 9. [3]

I shall marshal evidence in support of the following propositions: (1) concepts of temporal organization in the music of early India reflect the influence of the prevailing cultural ideology, just as the concept of vocal sound production has been seen to reflect traditional thinking on the nature of space; (2) among the most powerful pressures on the arts of India have been cultural preferences for the circular disposition of space and the cyclical disposition of time, of which the latter developed gradually during the period covered by this study; (3) the temporal structure of Indian music is signaled both visibly and audibly by a gesture language with symbolic and

ritual connotations; (4) the musical experience, as traditionally conceived, appears to demonstrate a confluence of two simultaneous streams of time—a physical, divisible, external time and an internal stream of continuous time, devoid of any distinctions: "Time is a form and formless too," in the words of the *Maitri Upaniṣad*; (5) the words chosen or coined to represent the various temporal concepts contain etymological clues suggesting that temporality in music is understood as a manifestation of the cosmic process of continuous creation; and (6) among the keywords for the organization of time in music have been these: control, limitation, and equilibrium—as if to suggest that time's power must be continually held in check lest it run away with us.

Much of the human experience of temporality in music arises as a result of our perception of time as an immense hierarchy, a hierarchy that extends from the smallest rhythmic units (individual tones, durations, accents, and pulsations) to intermediate levels of structure (patterns, phrases, poetic lines) to the larger, deeper structural levels (formal sections, entire compositions and performances). In the case of Indian music it seems particularly important to recognize and emphasize those aspects of the temporal hierarchy that outlast the duration of the individual musical event: musical seasons, creative lifetimes, the understandings that are handed down from teacher to student, the common features of a repertoire, the open-ended musical frameworks (*rāga*s and *tāla*s) that persist beyond the lifetime of a performer, the abiding properties of the musical system (such as the designation of *sa* as a common final for the entire later *rāga* system), and the glacial evolution of musical practice and its theory over many centuries.

I propose to examine early traditions of music and musical thought in terms of this hierarchy; for convenience, I shall adopt terms such as "surface" and "foreground" to describe the shorter units of rhythmic experience. [4] In the musical hierarchy there can be no fixed lines of division between the foreground rhythms of the musical surface and the larger rhythms and spans of structure, so I shall draw my own lines in a manner consistent with the standard Indian categories.

I will first examine temporal imagery in ancient Indian literature, drawing material from one of the two hymns to time in the *Atharvaveda*. Second, I will analyze the system of *tāla* as it is presented in the early musicological literature, with special attention to its inventory of temporal concepts and constructs. Next I will discuss the topics by which the rhythmic surface was organized and understood (hand motions, durations, proportions, silence, tempo, and the various *tāla* patterns). Finally I will consider the possible influence of text rhythms and the interaction between *tāla* and poetic

meters. I will discuss the remaining levels of the temporal hierarchy in chapter 9, under the heading of form.

8.2 THE IDEA OF TIME IN ANCIENT INDIA

Time draws [the chariot] like a horse with seven reins, a
 thousand-eyed, ageless, rich with seed.
Astride it are the seers who understand inspired songs; its
 wheels are everything that exists.
Thus Time draws seven wheels; seven are its hubs; immortality
 is its axle.
Hither Time advances, carrying all beings; he, the first god, now
 hastens onward.
A brimming vessel has been placed upon Time; we see him
 now existing in many forms.
He carries away all these beings; they call him Time in the
 highest heaven.
In oneness Time bore these existences; in oneness it
 encompassed them.
Time the father became Time their son; no glory is higher
 than his.
Time begat heaven above; Time also begat these earths.
That which was and that which shall be—urged forth by
 Time—spreads out.
Time created the earth; in Time burns the sun.
In Time are all beings; in Time the eye sees afar off.
In Time is mind; in Time is breath.
In Time names are fixed; as Time unfolds all creatures rejoice
 in it.
In Time is fervor; in Time is the highest; in Time is spiritual
 exaltation.
Time is the Lord of all things; Time was the father of Prajāpati.
By Time this universe was urged forth; by Time it was born and
 in Time it is set firm.
Time, having become the brahman, bears the most exalted one.
Time generated all creatures; and in the beginning Time
 created the Lord of creatures.
The self-existing one and the creative fervor were born of
 Time.

Atharvaveda 19.53[5]

I know of no more colorful image of time than the thousand-eyed horse personified in this hymn as the creator-god and source of primordial power. The horse plunges across the sky (presumably pulling the sun chariot) while balancing a "brimming vessel" on his back. The horse and chariot imagery draws upon one of the most familiar metaphors of the Aryan invaders, but the underlying cluster of ideas may reach even farther back to the magical cults of the Indus Valley civilizations and the indigenous Dravidian inhabitants of ancient India. How do we make sense of such a welter of temporal imagery? The more philosophically minded authors of the Upanishads sought to refine and intellectualize it, while later exponents of the orthodox philosophical systems felt constrained to react against it and explain it away.

Time, the hymn continues, exists in many forms: the fertile semen of the horse (a symbol of pure potentiality), the heat energy of the sun, human respiration, the utterance of sounds, the sacrificial formulas with which the gods are invoked and time maintained, the perception of forms by bestowing names upon them, and the defining power of mental activity. This cluster of ideas draws together many important strands in traditional Indian thought. The result is a complex metaphor of time as a cosmic generating principle born of inner energy. The seers who sit astride the chariot, according to the commentarial tradition, are responsible for the control of time by means of their daily sacrifices and chanting of mantras. I would like to emphasize six of the many themes in the hymn, each of which has had implications for the idea of music.

1. Time as described here is no empty or inert dimension: it is conceived as a causal power and procreative force, begetting all creatures, all gods, and the entire world. (And by procreation I mean creation in the fullest sense of the word, including the continuous cycle of biological growth and decay and the cosmic cycle of generation, destruction, and regeneration.)[6]

2. Time is also presented in the hymn as the *urger,* a ripening force and the principle of intensification—working its effects through the agency of heat energy and creative fervor (*tapas*), bringing spiritual purification (*brahman*), articulation (born of breath, the ultimate source of sound), and continuity. As the result of these urgings, time "spreads out"—an early recognition of the role of permutation (*prastāra*) as time unfolds in a series of metamorphoses.

3. Time is also celebrated as the *definer* and the medium for all articulation and clarity, by means of thought, vocal utterance, and the giving of names.[7]

4. Time is seen as both the origin and the fruit of ritual action. In fact time is regarded as dependent upon the correct performance of ritual: in this Vedic concept of world order, time is made to happen by the recitation of sacred formulas and the performance of sacrificial actions.

5. In addition to all these graspable characteristics of time, the hymn includes a clear reference to a transcendental category of time in the form of a deity—a deity which, though multiform, is in reality one. This must be among the earliest references to what has since developed into a conventional antithesis between manifested, divisible time and unmanifested, indivisible time—"that which begins with the sun" and "that which is prior to the sun."[8]

6. And finally, time is circular. Multiple images of circularity dominate the language of the hymn: the chariot wheels with their spokes, hubs, and axles; the sun, the year, the eye, the cycle of human life and the generations, and the cryptic brimming vessel, which has become the object of much commentary. It has been interpreted as the sun, a symbol for the year, a burial urn, or even as a more abstract reference to time as the container for all human actions and events.

These themes merit some elaboration. Certain of the references are conventional topics of ancient cosmological speculation, especially the notions of time as sevenfold (a culturally significant number in most early civilizations), time as fate, time as the destroyer, time as that which eventually reveals all things, time as past, present, and future, and time as manifested in the recurring seasons of the year. It is not clear to what extent the thinking of ancient Mediterranean civilizations may have made its way into Indian thought, but many of the special intuitions of time embedded in the hymn have no parallel elsewhere in antiquity. It is true that many ancient literatures have referred to time as cyclical, and these references rest on more than an objective description of how nature works: the cycle of time can be interpreted as a symbol of man's quest for continuity, as he seeks reassurance that the sun will continue to rise each day, the earth will continue to bring forth crops, the animals will breed, and the individual human being can be assured of some measure of continuity—both backward in time (to his ancestors, the Pitṛs) and forward (by means of his children).

But in later Indian thought, the idea of a cycle took on a double meaning; it became a symbol not only of continuity but also of limitation. The cyclical rhythms of life, and by extension also those of music, not only carry the creative force necessary for their perpetuation, but they must eventually be overcome, as people assert control over their senses and actions (the way of the yogin) and thus seek to transcend the state of illusion wherein they are

subject to the limitations of time as manifested in ordinary human experience. For one who is able to accomplish this, as the author of the *Maitri Upaniṣad* wrote, "time withdraws afar."

I am emphasizing here the profound connections between the concept of time, ritual action, and the structure of music. In India, as in many other ancient cultures, the idea of music arose partly within the context of religious ceremony, and traces of ritualistic behavior still inhere in formal music making. This may also be true with respect to the musical event in more recent Asian and Western practice, but in the case of India it carries particular significance. The control of musical structure by symbolic gestures, the special connotations of the breath in the production of musical sound, the elaborate preperformance rituals, the solemnity in which the profession (and especially the teacher-student relationship) has traditionally been held, and the extraordinary degree of empathy generated during a performance are all suggestive of a deep-seated cultural assumption that music is something more than meets the eye and the ear. The implication is that music is a ceremonial, symbolic representation of cosmic process—a sacrificial offering and an oblation.

The link between time and sacrifice is very ancient. In the well-known *Puruṣa-sūkta,* one of the latest compositions in the *Rgveda,* the seasons of the year are the elements of sacrifice in the ritual dismemberment of Puruṣa, the cosmic man, whose parts became everything that exists. The appropriate verse, in Walter Maurer's translation, reads: "When with Puruṣa as oblation the gods offered a sacrifice, the spring was its clarified butter, the summer the fuel, the autumn the oblation."[9] The reasoning is deliberately circular: time becomes the means of sacrifice and makes sacrifice possible; but as the direct result of that sacrifice, time is established and maintained in its proper course. If time appears, confusingly, to be both the agent and the outcome of the sacrificial process, it is worth remembering that even at this early time thinkers were slowly groping their way toward a more sophisticated understanding of time. In this connection Raimundo Panikkar has written eloquently on the evolving relationship between time and sacrifice in later Vedic times:

> Time is born with sacrifice, and it is by sacrifice that it is once again destroyed. . . . The Vedas sought the continuity of time through the sacrificial act, but the Upanishads began to question the permanence of this act and this continuity. . . . Continuity was no longer to be found externally, in the ritual or the cosmos, but internally, within man, or more exactly within the Self, the *ātman.* . . . The transition from the cultic time of the Vedas to

the interiorized time of the Upanishads occurs evidently at the point where respiration, interpreted as a sacrifice, takes the place of the sacrifice of fire.[10]

The keyword here is *respiration*, and the emphasis on breath (which I noted earlier) suggests that the focus of sacrifice is beginning to shift from external, ritual action to internal action—and also nonaction, that is, self-discipline and control of one's physical and mental processes—and accordingly signals a shift of focus from external time to time as internalized. In this interpretation, sacrifice becomes less a mechanical performance of a contractual obligation and more a means of seeking truth where it abides, within the self. In developing and sharpening the concept of internal time and in capturing its image in the form of vital breath, Indian thinkers managed to reconcile the conflicting cultural intuitions of time they had inherited. Their solution was to conceive of two coexisting streams of time: the external time of daily experience, manifested in the seasonal recurrences, daily routines, and also in the sharp discontinuities of life; and the special category of internal time, devoid of divisions, motions, change, and all other such distinctions.

I am suggesting here, and will give additional evidence to support the suggestion, that musical behavior in the Indian tradition has been deeply influenced by, and continues to manifest, this confluence of two temporal streams. Gesture and breath are the archetypal forms of music making and may be interpreted as both symbols and means of sacrifice: like the ancient vedin, the Indian musician controls audible time by actions—the motions of his hand and the outflow of his breath. With the gestures of *tāla* he regulates the illusion of outer time with its gross divisions and audible forms, while with the controlled emission of vocal sound he manifests the true, continuous, inner time. Of the musical dimensions, *tāla* has been assigned the chief responsibility for maintaining proper control in performance; and in the theatric rituals preceding the performance of a play, the exact rendering of the hand gestures, durations, and proportions of the music was considered a matter of greater importance than the correct delivery of the poetic text. Abhinavagupta made the link between *tāla* and ritual action explicit in his remarks accompanying the *tāla* chapter of the *Nāṭyaśāstra,* explaining that the various hand motions had originated in ancient sacrificial gestures.[11]

Later Indian philosophers sought, as Augustine did in the West, to refine and dematerialize the idea of time, to divest it of its many mythological and

cult associations and give it a proper place within their complex systems. They came to differ, as we would expect, on certain important points: whether time was real or empirical, whether it could be perceived or only inferred, and whether it was one or many, continuous or atomistic. The arguments were generally subtle, complex, and largely irrelevant to the more simplistic concept of time embedded in the musical tradition. If there is any consensus, it is that time is one, indivisible, eternal, and free of any limiting attributes or qualities such as change, motion, form, and the like; its apparent properties are inferred by the mind as the result of our perception of such things as speed, slowness, duration, succession, simultaneity, priority, and posteriority. An important contribution of the Buddhist, Jain, and Yoga philosophies was their concept of time as a succession of discrete instants—merging, in a celebrated Buddhist image, in the apparent circle of flame produced by a whirling torch, or in the illusion of a stream of water; both of these images have become popular analogies for the continuity heard in music. Perhaps it was a subconscious compensation for the primitive obsession with isolating, naming, and counting individual units of experience that led thinkers to argue in favor of a dynamic concept of time that enabled them to see continuity penetrating and organizing the individual atoms. Surely this type of wishful thinking is present in the conceptual organization of sound.

The aim of the yogin was to perceive what exists between the successive instants, to reject the apparent continuity of experience, and to seek freedom from illusion in all its forms, by widening his perception of the moment in the attempt to find ultimate reality in what has been called the timeless present. In this cultural emphasis on what lies between, we see one of the vital continuities of Indian thought, not unrelated to certain other enduring concepts or habits of thinking: the idea of zero, the cultural meaning ascribed to silence, and the essentially "passive-negative" qualities of Indian thought. The moral is that nothingness as a cultural value is equal to, or even superior to, somethingness.[12]

I have given illustrations of the three temporal concepts noted by Bhartṛhari—time as power (*śakti*), as a deity (*devatā*), or as constituted within the self (*ātman*); but I have not mentioned Bhartṛhari's own view. Bhartṛhari's penetrating analysis of time, grounded in his philosophy of language and informed by the great tradition of Sanskrit grammar, led him to define time as the *sūtradhāra* ("string holder") of the world, a limiting power that causes the world to operate by means of an alternation between restraint (*pratibandha*) and release (*abhyanujñā*). It is notable that he chose the word that defines the ceremonial role of the stage director in the

Sanskrit drama. In addition to this subliminal allusion to time as the *theatrum mundi*, the grammarian has likened time to the line held by a falconer, which permits free flight until the end of the line is reached and then restrains the falcon's flight. In the same manner time permits and then prevents the appearance of successive phenomena.[13] Many ancient cultures have conceived of time as discontinuous, but it is unusual to find time described as manifesting a binary rhythm. Bhartṛhari's explanation was endorsed by later Kashmir Shaivite authors, who made an important place for time in their elaborate systems, as a limiting power (*kāla śakti*).[14] This brief survey of the development of concepts of time in early India has barely scratched the surface of this many-faceted idea, but it has served to identify several strands of thought which have found expression in the temporal structure of music. In particular, we shall note the pervasiveness of the idea of limitation in discussions of musical rhythm.

8.3 *TĀLA*

> I offer threefold praise to this octoform body (Śiva), whose essence is illusion, holding a token of enjoyment, in whom there is perfect equilibrium of all worldly activity by means of divisions (*kalā*), time (*kāla*), and rest (*laya*).
>
> Abhinavagupta, *Abhinavabhāratī* 31.1

For the perspective of an influential thinker on the cluster of ideas from which many of the basic temporal concepts of ancient Indian music were borrowed, we turn to the benedictory stanza Abhinavagupta composed to introduce the *tāla* chapter of Bharata's *Nāṭyaśāstra*.[15] The eleventh-century author managed to pack a large number of metaphorical references into a few poetic lines, drawing upon a lexicon of conventional allusions to the god Śiva, who has by this time moved into the foremost place among the patron deities of music, dance, and the theater. Some close analysis will help to clarify Abhinavagupta's line of argument.

Equilibrium (*sāmya*) is the main purpose of *tāla* according to both Abhinavagupta and his earlier colleague Dattila; and from equilibrium comes "fulfillment in both this world and the next."[16] In this connection it is useful to recall that Abhinavagupta's comments are attached to a text outlining the ritual requirements for the drama, and that *tāla*, of all the musical dimensions, has been assigned the major responsibility for coordinating, integrating, and maintaining control over all aspects of the performance. The correct performance of ritual is obviously no small matter, and the benefits of *tāla* were intended to go far beyond the admitted pleasures of musical

rhythm. And similarly, the equilibrium that Abhinavagupta praises, visualized in the form of Śiva's celebrated pose as Lord of the Dance (Naṭarāja), is something more than a state of simple physical balance or repose; it is the state of cosmic equilibrium precariously maintained in the midst of the continuous creation, preservation, and destruction of the world, its forms, and its creatures. Śiva has assumed all three functions of the divine patrons of world process, functions shared previously with Brahmā and Viṣṇu.

How is this equilibrium achieved and maintained? As the result of the integrated activity of three temporal elements: *kalā*, the division of musical time into individual units; *kāla*, the ongoing stream of time itself; and *laya*, the interstices between the successive units. Abhinavagupta's interpretation has likened the temporal process in music to the three phases of the cyclical evolution of the cosmos: the differentiation of primal matter and its division into perceptible forms; orderly movement in structured time; and finally, the dissolution of all created forms back into their original state of undifferentiated matter; after this the cycle begins once again. The equation reads: equilibrium (rhythmic or cosmic) = division + time + rest. All three phases are made manifest by actions—the hand motions of *tāla* or Śiva's cosmic dance.

Abhinavagupta has proposed his compound *kalā-kāla-laya* as a substitute reading for Bharata's *kalā-pāta-laya*, which the commentator interprets as technical terms of music. In this context, *kalā* signifies a silent gesture, *pāta* ("beat") an audible gesture, and *laya* the span of time between the successive gestures.[17] With these three components the temporal structure of music is manifested. This in essence is the idea of *tāla*.

I shall pass more lightly over the other references in the stanza. Śiva is invoked with one of his conventional epithets—*aṣṭamūrti* (octoform). Once again the poet has something more in mind than a profusion of arms and legs. Śiva's eight forms, according to the traditional explanation, are the five elements (earth, water, fire, wind, sky), the sun and moon, and he who offers a sacrifice.[18] Here is yet another reference to the world as sustained by sacrificial action, and we begin to see more clearly the outlines of the case Abhinavagupta is building on behalf of *tāla*. The elemental components of the world as we know it are held together by the actions of the sacrificer, just as the structure of music is secured by the actions of *tāla*. If Śiva's essence is illusion, as the commentator contended, that illusion consists of apparent motion and the perception of successive forms; reality abides in the absence of motion and the knowledge that all forms are nothing other than different aspects of the One. Form is mutable, matter is malleable, and both

subsist in illusion. The goal of *tāla* is to maintain equilibrium during the parade of manifested forms.

The phrase which I have translated as "holding a token of enjoyment" is cryptic, perhaps deliberately so. Beyond the surface reference to the pleasures of the theater and the *jarjara* carried by the stage director in the opening ceremonies, it may be taken together with the word *tridhā* (threefold) as an allusion to Śiva's trident; this has been interpreted as (1) a sign that he has assumed the three functions of creation; (2) a symbolic representation of the three *guṇa*s of the Sāṅkhya philosophy (illumination, darkness, and passion), the three strands from which the fabric of life is woven; or (3) the three subtle arteries of the body in the Yoga philosophy.[19] Any of these interpretations lends additional depth to Abhinavagupta's offering of praise. Śiva is often represented with three eyes (the sun, the moon, and fire), with which he is able to see the past, present, and future. The point of all this "threeness" is to underscore the importance and mutual dependence of the three primary temporal concepts that first stimulated the commentator's imagination and motivated this flight of poetic fancy.

I turn now to the technical features of the *tāla* system. The word *tāla* has an interesting ancestry which is none too clear. The obvious derivation is from the noun *tala* (a flat surface such as the palm of the hand, a pedestal, a fan, or an elephant's ear) and perhaps also from the verbal root *taḍ* (to strike).[20] Following this semantic route, *tāla* thus signifies an action applied to, or making use of, such a flat surface, with division or measurement as its purpose. It is also an important unit of spatial measure in the visual arts, based upon the length of the hand (as measured from the wrist to the tip of the middle finger) or the length of the face. The basic meaning of *tāla*, then, is "span"—a span of space or of time.[21]

Western musicologists may find their suspicions aroused by the sound of the word *tāla*, but as far as I can determine, the word is unrelated to the Latin *talea*, which means a "cutting" (of a plant) or a "bar" (of metal); in the musical terminology of medieval Europe *talea* is a technical term for a rhythmic pattern that was superimposed upon a preexisting plainsong melody and repeated over and over as the rhythmic framework for a composition.[22] This sounds similar to the cyclical *tāla*s of later Indian musical practice and suggests one of those coincidences which we always ought to suspect; but it seems to be nothing more than coincidence.

In early Sanskrit musical treatises *tāla* is both a general term for the entire system of rhythm and a special term for one of the eight hand gestures, in which the left hand slaps down audibly upon the right palm or the left

knee.[23] This ambiguity reminds us of the similar treatment of the word *svara*. As a system, *tāla* has been organized by means of the following set of topics. There seems to be no canonical order of presentation in the literature, so I have rearranged them to permit a more effective exposition.[24] The following topics, briefly defined, will serve as a partial index for this chapter and chapter 9.

1. *kalā:* a division of time, also a silent gesture demarcating such a duration
2. *pāta:* an audible gesture, usually a clap
3. *laya:* the rate of gestural succession, that is, "tempo"
4. *yati:* the principle of regulation and rhythmic control; also, in a more specialized sense, the temporal flow (whether even, accelerating, or decelerating)[25]
5. *pāṇi:* the principle of synchronization by which the entrances of the various performers are regulated
6. *pādabhāga:* one formal unit (measure, phrase) of a group of four, literally "a division into [four] paws" (as of a quadruped)
7. *mātrā:* a phrase or line, typically consisting of four *pādabhāga*s; also a time duration (mora), as in verse
8. *parivarta:* a prescribed repetition of a formal unit
9. *vidārī:* a pause or cadence, also a line or phrase ending with such a pause or cadence
10. *aṅga:* a musical section consisting of several phrases or poetic lines
11. *vastu:* a longer type of formal component; a stanza
12. *prakaraṇa:* a collective term for the seven major forms (the *saptarūpa*s or *gītaka*s) of the ancient ritual music[26]
13. *avayava:* alternative versions of the *gītaka*s, versions that arise from the many performance variables
14. *gīti:* text setting; also style in general
15. *mārga:* the relative density of events within a given span of time

This set of topics is obviously designed to accommodate a complex hierarchical system of rhythm, and falls into four distinct levels. The first five topics control what we may consider the *infrastructure* of musical rhythm—gestures, durations, accents, rests, and their synchronization. Together with the patterns they create, these will occupy our attention for most of this chapter. Topics 6–11 constitute the *structural* level of phrases, lines of text, caesuras, formal sections, and poetic stanzas. Topics

12 and 13 may be regarded as *suprastructure,* the level of entire composi-tions. Topics 14 and 15 pervade all levels of the rhythmic hierarchy. In general I shall defer analysis of the structural and suprastructural levels, along with the tactics by which events on these levels are delineated, to chapter 9. Note that the concept of cycle is conspicuously absent from this set of topics, unless it is present in embryo in the notion of an obligatory repetition (*parivarta*).[27]

Many of the same terms are still in use today, although some of their meanings have shifted along with the rhythmic basis of the later system. For comparison, I present the "ten vital breaths of *tāla*" (*tāla daśa prāṇas*) by which the modern system of rhythm is organized in Karnatic music.[28]

1. *kāla:* the twelve divisions of "absolute" time: from *kṣaṇa* ("in-stant," the time required for a needle to pierce one lotus leaf) to *kā-kapadam* ("crow's foot," a duration 262, 144 times as long)[29]

2. *mārga:* the density of events within a pattern or rhythmic cycle

3. *kriya:* the collective term for the hand gestures by which the tem-poral structure of music is manifested, including both silent and audible gestures

4. *aṅga:* the component parts of a particular *tāla* cycle as signaled by the gestures

5. *graha:* the point in a *tāla* cycle where the music begins

6. *jāti:* expanded versions of the basic *tāla* patterns, produced by counting with the fingers

7. *kalā:* a variable unit of time specifying the ratio between melodic activity and the structure of the *tāla*

8. *laya:* the three tempos (slow, moderate, fast)

9. *yati:* the rhythmic design of a cycle as manifested by the pattern and relative length of its components

10. *prastāra:* the process of permutations

The contrast is striking: structural and suprastructural topics have van-ished from the list, and in their place we see a number of concepts designed for the synchronization, control, and perpetuation of the cycle (*āvarta*), which has now become an implicit assumption of the system. The formal basis of the entire system has shifted from a set of complex modular formal structures to an integrated system designed to facilitate improvisation over a repeated rhythmic cycle. This is essentially the difference between *mārga* and *deśī*—between the prescribed forms of the ritual tradition and the great variety of regional patterns and procedures which began to be codified dur-ing the second half of the first millennium. These patterns and procedures

display not only a contrasting method of organization but also a different, richer repertoire of *tāla*s, expanding from the five recognized by Bharata and Dattila to the 120 *deśī tāla*s cataloged by Śārṅgadeva.[30]

The question also arises, why such an abundance of temporal concepts? Part of the answer must lie in the evident delight the Indian mind takes in dissecting existing categories and inventing new ones. But the more impor-tant part of the explanation is related to the issue of temporal standards and the relativism which a rhythmic system of any complexity and sophistica-tion must provide if it is to be successful. In early, nontechnological civiliza-tions the measures for time in music were as slippery as the measures devised for the dimension of pitch. Long and short syllables and the conven-tional tempo of speech were, and are, the obvious candidates, but early Sanskrit grammarians had long recognized their lack of precision. If the *mā-trā* (referring here to the basic unit of measure in both poetry and music) could be defined no more precisely than as the time required to utter five consonants or blink one's eyelids five times, the best solution was to provide for a flexible set of equations among the several concepts that governed the durational structure. In this way the profusion of temporal relationships and the various hierarchical levels of the music could be specified with great precision, leaving it for comfort and convention to dictate the basic pace. I shall return to these issues of duration and timing in a moment.

8.4 CHIRONOMY

The single most distinctive feature of the Indian rhythmic tradition is the way the temporal structure of music is manifested and controlled by means of hand motions—the claps, finger counts, and silent waves that accompany every performance of Indian music. These gestures are obviously practical signals to other members of the ensemble and help to insure a synchronized performance, but they are at the same time mnemonic aids, external mani-festations of the internal structure and energies of the music, markers of the passage of time, and symbolic vestiges of their original ritual function. The gesture language of the modern *tāla* systems has discarded many of the complexities displayed in ancient practice, since its role is now limited to defining the exact location within the rhythmic cycle.

Eight gestures, four silent and four audible, provide the basis for the chi-ronomy of the ancient system of *tāla*. These gestures are listed and de-scribed in (16), along with translations of their names and the abbreviations by which the gestures will be represented. To catch the eye more readily, silent gestures will appear in *italic* type and sounding gestures in roman. All gestures are performed with the right hand unless otherwise indicated.

16. The gestures of the ancient *tāla* system

The four *kalā*s or *niḥśabda* (silent) gestures

> *āvāpa* (sowing, as in seeds): palm up with fingers folded (*ā*)
> *niṣkrāma* (exit): palm down with fingers extended (*ni*)
> *vikṣepa* (scattering): open hand waves to the right (*vi*)
> *praveśa* (entrance): fingers closed with palm downward (*pra*)

The four *pāta*s or *saśabda* (audible) gestures

> *dhruva* (unchanging): a finger snap preceding a beat[31]
> *śamyā* (peg): right hand slaps down on left hand or right knee (*śa*)
> *tāla:* left hand slaps down on right hand or left knee (*tā*)
> *sannipāta* (struck together): hands clap together (**S**)[32]

Some of the names are cryptic, but most are easily identifiable as simple descriptors of the shape or motion of the gesture. In many performances the gestures were, as they may be today, reinforced by the sound of the small pair of bronze *tāla* cymbals, but the gestures alone are sufficient to regulate the performance. What the gestures mean is a complex question.

What they do *not* mean, first of all, is an accent or pulsation in the music. Nothing could be more misleading than to infer that any of these gestures signifies the special quality of metric weight or potential stress that we attribute to, say, each of the four beats of the standard simple quadruple meter in Western music ($\frac{4}{4}$).[33] The pattern of gesture is a code that carries a great deal of information about the underlying musical structure, but it tells us nothing about the melodic rhythm or the accompanying rhythm played by the drummer—except, of course, that structural and melodic rhythms will often be in phase and synchronized with one another.

One gesture can carry many meanings, and the consequent ambiguity is a characteristic feature of the system and the repertoire. Accent and the structural meaning of a gesture are determined primarily by context, particularly at the beginnings and endings of patterns and at points where superimposed patterns come into phase with one another. In this respect *sannipāta*—which is an obvious ancestor of the beat *sam* in modern *tāla* practice (the gesture marking the point where one cycle terminates and the next begins)—has been invested with special meaning as a structure marker and is reserved for initial or final gestures of patterns and formal components. The remaining gestures are more neutral. *Dhruva* is the most neutral of all and plays an insignificant role in the delineation of form; these finger snaps provided additional control of slow tempos and marked the passage of time during certain sections where the regular sequence of meaningful gestures was suspended.[34]

Let us explore the possible meanings of a gesture sequence in the ancient ritual music. The three principal audible gestures—*śamyā, tāla,* and *sannipāta*—can represent either single events (individual syllables or consecutive durations) or the final unit in a pattern or a subdivision of that pattern. In contrast, the silent gestures were reserved for the beginnings of patterns and were restricted to what I shall refer to as the "expanded states"—patterns inflated to two or four times their original length by the prefixing of the appropriate number of silent gestures.[35] The concept of inflatable form is one of the most distinctive structural features of ancient Indian music, and it will become clearer in the patterns diagrammed in §8.5 and in the forms reconstructed in chapter 9. For the moment it will be sufficient to remember that silent gestures mark the early stages in expanded patterns; in the conclusion to this chapter I will touch on the reinterpretation of this role in modern Indian music.

But this association with the beginnings and ends of patterns by no means exhausts the possible meanings of a gesture or sequence of gestures. *Śamyā* and *tāla,* in keeping with their alternation of right and left hands, serve to maintain a binary rhythm of alternating qualities, but with no implication of arsis-thesis or strong-weak. Sounding gestures are also prescribed with increasing frequency near the end of a large formal unit; they serve here as audible and visible signals of the passage of time and impending closure. In contrast, the four silent gestures maintain the neutral background stratum of rhythm in the expanded states, as in (17):

17. Patterns of silent gestures in the expanded states

ā ni vi pra   a pattern expanded to four times its basic length, within which no other structural meaning is conveyed except when one or more of the silent gestures are replaced by the audible gestures that define the musical structure

ni   pra[36]   a pattern expanded to twice its basic length, again without any other structural significance except when substitute sounding gestures define a superimposed formal pattern

It is evident that formal meaning is determined not by gesture but by *pattern of gesture,* and that the role of any individual gesture (with the exception of *sannipāta*) will often be ambiguous. Indeed, one of the prime objectives of Indian art is to provide multiple meanings for the senses to savor and the mind to ponder. To summarize, a gesture may represent any or all of the following: the basic structural pulse of the music, one of the standard *tāla* patterns superimposed upon that pulse,[37] an inflated form of

one of these patterns, a certain stage in the progress of a large formal component, or the beginning or end of a pattern on any level of the rhythmic hierarchy. When some or all of these patterns fall into phase, the result is accent—not necessarily a stress accent but an accent of pure structure.

The gesture language is thus a language of allusion that adds a new dimension to the complex question of musical meaning. It is a truism to say that music is an art of relationships, implications, and cross-references; the fascinating element here is the extraordinary degree to which formal relationships embedded in the music are made manifest and communicated in a dimension which most Western listeners would regard as extrinsic to music. This would clearly be a misjudgment, and we must revise our concept of Indian music accordingly.

8.5 RHYTHMIC PATTERNS

Having thus established the repertoire of hand gestures by which rhythmic structure is manifested, we are now in a position to explore the set of patterns described in the early layers of musical texts and thereby identify the basic durations, sequences, and tactics of grouping. But first a word of caution: I shall be examining structural rhythms, not the surface rhythms of melody or drumming. While it is reasonable to infer that the rhythms of structure may often have been replicated in the patterns of performed, surface rhythm, we still have no evidence that would allow us to reconstruct the musical flesh and skin that covered these bones. After some experience with contemporary performance, noting in particular the typical drum patterns, it is possible to draw certain inferences: (1) strings of even durations and regular patterns of binary alternation must surely have been a part of every performer's repertoire and daily experience; (2) the conventional groupings of text syllables into *gaṇa*s of two, three, and four units (metrical feet) were also available as models for rhythmic patterns;[38] and (3) the practice of permutation (*prastāra*), for which there is clear evidence since ancient times, insured that the authorized patterns, whatever they were, would sooner or later appear in all possible variants and contexts. I shall have more to say later about the composite rhythms and the interaction of the various rhythmic layers in early Indian music, but the first task is to examine the five *mārga tāla*s outlined in *Dattilam* and the *Nāṭyaśāstra* and repeated in the later texts.[39]

In (18) each of the five patterns is displayed in the form of (1) the prescribed gestures; (2) the sequence of durations, that is, short *(laghu)*, long *(guru)*, and "protracted" *(pluta)*, in an invariable ratio of 1:2:3; (3) the proportions of this sequence, which become important when attempting to

recognize the expanded versions of these patterns; (4) the traditional Indian rhythmic notation in which I = *laghu*, S = *guru*, and Ś = *pluta*; and (5) the total time span of the pattern as measured in *kalā*s. In this case the *kalā* unit is equated with one long syllable. Each pattern appears here in what I shall call its *syllabic* state (the Sanskrit term is *yathākṣara*, "according to [the nature of the] syllable"), which means simply that each action represents a single syllabic duration, with the durations signified in each case by the nonsensical mnemonics of the *tāla* names.

18. The five *mārga tāla*s

(1) Caccatpuṭaḥ:
   guru - guru - laghu - pluta (S S I Ś) = 4 *kalā*s
      2 : 2 : 1 : 3

(2) Cācapuṭaḥ:
   guru - laghu - laghu - guru (S I I S) = 3 *kalā*s
      2 : 1 : 1 : 2
   both sharing the three following gesture patterns: S   śa   tā   śa
                                                                      or
                                                            śa   tā   śa   tā
                                                                      or
                                                            tā   śa   tā   śa

(3) Ṣatpitāputrakaḥ:
   pluta - laghu - guru - guru - laghu - pluta (Ś I S S I Ś) = 6 *kalā*s
      3 : 1 : 2 : 2 : 1 : 3
      S   tā   śa   tā   śa   tā   (or vice versa)[40]

(4) Sampakveṣṭākaḥ:
   pluta - guru - guru - guru - pluta (Ś S S S Ś) = 6 *kalā*s
      3 : 2 : 2 : 2 : 3
      tā   śa   tā   śa   tā

(5) Udghaṭṭaḥ:
   guru - guru - guru (S S S) = 3 *kalā*s
      2 : 2 : 2
      ni   śa   śa

The 3 basic durations: *laghu* ("light") = short
                       guru ("heavy") = long   } 1 : 2 : 3
                       pluta ("floating") = protracted

Metrical analysis of the 5 mnemonic *tāla* names (in which the distinction between long and protracted durations is not recognized):

Caccatpuṭaḥ   — — ◡ —
Cācapuṭaḥ   — ◡ ◡ —
Ṣatpitāputrakaḥ   — ◡ — — ◡ —
Sampakveṣṭākaḥ   — — — — —
Udghaṭṭaḥ   — — —

This is a surprising set of patterns, for which the obvious comparison to the array of metrical feet available for Greek or Sanskrit verse is misleading in several respects. The set of *tālas* is a more selective set, and the patterns (with perhaps the sole exception of the rarely used Udghaṭṭaḥ) are somewhat longer and more complex than the most popular poetic feet of Attic Greek verse. More important, they lack entirely the qualities of arsis and thesis which differentiated otherwise similar Greek meters: while the individual units differ in both quantity (because of the durations) and quality (because of the gestures), they are neutral with respect to accent and metric weight. I can best put the comparison this way: metrical feet are essentially surface patterns, whose influence may sometimes spread into the deeper levels of the rhythmic hierarchy (colon, line, phrase, stanza), but the five *mārga tālas* are structural patterns. They are conceptual rhythms which may indeed appear in the form of successive syllables and durations on the musical surface, but they are even more valuable because they can organize and control the deep structure of music. When this occurs, the rhythms of *tāla* are manifested in the form of gestures and proportions buried in the musical structure and separated by many intervening pulsations and events, much like the letters of the word CANADA on a map of North America.

There is yet another conceptual dimension to these patterns: whether each is regarded as exemplifying threeness (*tryaśra,* "triangular," or *ayugma,* "odd") or fourness (*caturaśra,* "quadrangular," or *yugma,* "even"). Of the five, only Caccatpuṭaḥ has been assigned to the quadrangular class. This apparent profusion of triangularity is striking in view of the prevalence of duple and quadruple meters and the relative scarcity of simple triple meter in world music. And musicians may also be surprised by the irregularity of some of the patterns. But this results from evaluating the set of rhythms from a foreign perspective and with a different set of expectations. The early *tāla* patterns were designed, not as simple sequences that could be repeated many times and maintained automatically as a foundation for a composed or improvised melody, but as deliberately asymmetrical patterns whose components and proportions could be detected in the midst of a complex musical texture. As such, the *mārga tālas* must have suited admirably, judging from how long they remained the preferred structures of the theatrical ritual music.

When musical needs changed—as must have happened with the rise of improvisation, the advent of the drone, the turn to cyclical rhythm, and the decline of the theater tradition—the rhythmic system adapted to these new

needs. The result was the system of *deśī tālas,* which we will shortly examine.

It will also be apparent that three of the five patterns are palindromes, and that their palindromic structure is not always reinforced by the gesture language. It is difficult to assess what this meant for early rhythmic practice, and the textual evidence is uninformative. It seems not to have meant the widespread cultivation of retrogradable rhythms or melodies. What it suggests to me is that these patterns, along with their characteristic gesture sequences, created agogic accents (accents of length) at both their beginning and their end, and that the transition from one pattern to the next might thus have been made more obvious. One other thing is clear: these are not cyclical patterns in which the final of one also serves as the initial of the next; each initial and final was unique.

Some additional conclusions can be drawn from the gesture sequences illustrated in (18). The most common sequence is the regular alternation of right-hand and left-hand claps (even in the so-called triangular *tālas*), and therefore even at this relatively uncomplicated level of rhythmic structure a certain potential for rhythmic counterpoint has been built into the system. Of all the audible gestures, *sannipāta* is the least ambiguous and marks either the initial or the final unit in a pattern. *Tāla* patterns are often described with *sannipāta* (if present) at the beginning, but in expanded versions the pattern was almost invariably reversed so as to end with this gesture of summation. Perhaps this is further evidence for the usefulness of palindromes, in that the underlying sequence of gestures can be reversed without doing violence to the pattern it manifests.

8.6 THE CONCEPT OF STATE

I referred earlier to the concept of *state,* one of the most important of the rhythmic variables. Patterns and entire compositions were conceived and constructed in three such states: the syllabic (*yathākṣara,* also known as *ekakala,* "onefold"), the "twofold" (*dvikala*), and the "fourfold" (*catuṣkala*) states. In the latter two—which I shall refer to as the expanded, inflated, or manifold states—both the proportions and the total duration of the original pattern were doubled or quadrupled. In the course of this doubling or quadrupling some unexpected things happened, so it is essential to understand how the system works.

The solution required two steps: (1) the various durations (short, long, and protracted) were first resolved into an even series of long (*guru*) durations; and (2) the appropriate number of silent gestures was then prefixed

to each of the audible gestures that defined the *tāla* in its original, syllabic state. This is a remarkable solution, and surely not the only one possible. Two interesting results are (1) similar patterns on different levels of the rhythmic hierarchy are recognized by their proportions, not by their sequence of durations; and (2) musical patterns are defined, recognized, and indexed, as it were, not by their beginnings but by their endings. If it is true, as the critic Ernest Decsey once wrote, that we perceive relationships among phrases of Western music by the "rhyme" at their beginning (a melodic rhyme),[41] the ancient Indian solution was to create and recognize relationships among rhythmic and formal units by means of the structural rhyme—in effect, a visible and physical rhyme—at their end.

To make the process of structural inflation more concrete, (19) displays the most popular of all the *mārga tāla* patterns (Ṣaṭpitāputrakaḥ) in the three states.[42] Because a full understanding of this process is crucial in grasping the Indian concept of form in music, I ask the reader's indulgence if I appear to belabor the following three points.

1. It will be apparent that the same proportion (3:1:2:2:1:3) is manifested in each of the three states, with totals of six, twelve, and twenty-four *kalā*s, respectively. What may not be as apparent from the diagram is the vital difference between the syllabic and the expanded versions: in the former the proportions are those of the three basic durations, but in the latter the proportions represent groupings of identical, long durations. The result in musical practice is that a change into the syllabic state—which typically occurs at the end of a long section or an entire composition—produces an unexpected series of jaggedly irregular durations which, in my interpretation, signal closure. I interpret this effect as a rhythm of deep structure which, when compressed, works its way up through the various structural levels and is finally made manifest on the rhythmic surface. I regard this as one of the primary tactics of Indian musical form.

2. The sequence of prescribed gestures signals both the state and the particular *tāla* being performed: the shape of the *tāla* emerges gradually from the pattern of audible gestures marking the end of each proportional unit, in this case the sequence tā śa tā śa tā **S**. The state is deduced from the pattern of prefixed silent gestures—*ni pra* for the twofold state, and *ā ni vi pra* for the fourfold state. I like to think of the silent gesture sequences as a relatively neutral substratum upon which the audible gestures are superimposed and thereby clarify the form.

3. Note that the gestures are reversible only in the syllabic state. The only option for the manifold states is the version that concludes with *sannipāta*.
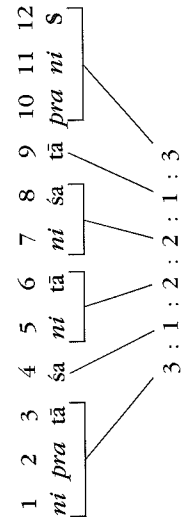

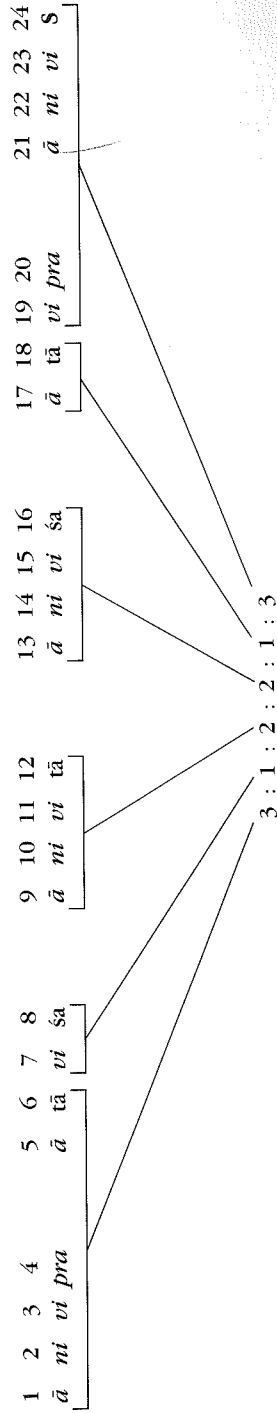19. Ṣaṭpitāputrakaḥ in the three states

The syllabic state:

1	2	3	4	5	6
tā	śa	tā	śa	tā	S

or

S	tā	śa	tā	śa	tā
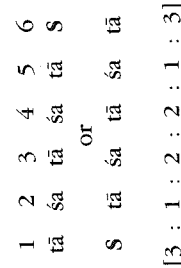
[3 : 1 : 2 : 2 : 1 : 3]

The twofold state:

3 : 1 : 2 : 2 : 1 : 3

The fourfold state:

3 : 1 : 2 : 2 : 1 : 3

8.7 Timing

For convenience I have organized this exposition of *tāla* in a sequence that may at first seem arbitrary. Instead of beginning with abstract principles of rhythm, I have plunged into the most concrete matters—specific hand motions and the durations they represent. Now that these have been established, it is time to examine some of the more fundamental aspects of timing, temporal standards, and—in particular—the shifting proportional relationships among the various components of *tāla*. I shall focus here on five concepts: *laya* (tempo, timing in general), *mātrā* (a measure of duration), *akṣara* (syllable), *kalā* (a conceptual unit of rhythm), and *mārga* (a measure of the density of musical events). Their collective responsibility is to define the timing of a composition or a performance.[43]

I use the word "tempo" with some hesitation, because it tempts us to jump to some obvious conclusions based on the Western experience of musical rhythm and meter. We shall see that the Indian experience of tempo is based on quite a different way of thinking. *Laya* is the primary term for the "pace" of music, and the means by which that pace is evaluated will be among the main issues in the following discussion. In more recent literature *laya* has developed into a general term for rhythm and timing: when a performer is said to have "good *laya*," we mean that he knows how to "keep time." Tempo, yes, but also good timing in the broadest sense of the word. The old saying "Śrutir mātā, layaḥ pitā" refers to this broad concept of *laya*. Often the first thing a teacher tells a young music student is, "Śruti (pitch, good intonation) is the mother [of music], *laya* the father."[44]

The sense of *laya* is more restrictive in the ancient and medieval literature: it signifies the time interval between one *tāla* action and the next. Or to put it somewhat differently, *laya* is the interval between the attack points of successive durations, each initiated by a gesture. It thus represents the phase of rest in the continuous alternation of action and repose which is the essence of the traditional concept of temporality in music, and which Bhartṛhari captured in his analogy of the falconer's line. I have already pointed out that this emphasis on what separates events, on the nothingness that alternates with somethingness, is one of the hallmarks of Indian thinking; I have also adduced other examples of this dynamics of the negative from various branches of Indian scholarship. Etymologically *laya* is linked with the phase of creation in which primal matter exists in an undifferentiated, amorphous state, thus lending emphasis to the role of the *tāla* gestures in creating and defining the world of musical forms.

I am arguing that tempo is essentially a *ratio* between selected layers of

the rhythmic hierarchy—in the case of Indian music, a ratio arbitrarily established between the sequence of *tāla* gestures and the standard measures by which all musical durations are reckoned. When we put it this way, the basic idea does not differ greatly from a pattern of conductor's beats controlled by the rate to which a metronome is set (expressed, for example, in the equation between one quarter note and M.M. 60),[45] except for the vital difference between a conductor's gestures and the gestures of *tāla* in the ancient rhythmic system. In the latter, the gestures differ in two important respects: (1) they may occur at a steady or a variable rate, marking equal or unequal durations; and (2) their pattern is not uniform; the variations in pattern delineate both the structure and the progress of the underlying rhythmic form—the "bones" of the music.

When we define tempo in Western music as the speed or rate at which a work is performed, we also assume a ratio between (1) a particular level of pulsation perceived in the music and (2) some internalized standard of temporal measure—perhaps, as some have suggested, the heartbeat. Manifestly this is not the only tempo to be found in music. There is also the tempo of surface rhythm (which is generally much faster than what we conceive as "the beat") and what Wallace Berry has identified as the "tempo of events" (which will be much slower than the beat).[46] All three of these tempos may readily be found in, say, the first movement of Mozart's Symphony in G Minor, K. 550: in the steady surface rhythm of continuous eighth notes, in the conductor's two hand gestures (down, then up) for each measure of $\frac{2}{2}$ time, and in the longer intervals between the beginnings of phrases and themes. But when asked to characterize the tempo, most musicians will unhesitatingly choose the conductor's beat as the rate to define (as fast or slow). It is interesting that unpracticed listeners will often select different rates of pulsation and interpret the tempo (of surface rhythm) as fast, when in reality the structural beats are in a more leisurely tempo.

The solution offered in the ancient system of *mārga tālas* was to fix, if not all of the ratios between the various levels of rhythmic activity, at least as many as possible—often as many as three or four. This was no simple task, and the system of *deśī tālas* signals the abandonment of this set of multiple rhythmic equations in favor of a short, repetitive cycle.

I shall attempt to summarize the respective roles of the members of these multiple rhythmic equations: the *tāla* gestures are the structure markers; *laya* is the interval between gestures; the *mātrā* is a conventional standard of time measurement; *akṣara* is a syllable (any sort, any length); *kalā* is a conceptual standard by which rhythmic form is measured; and *mārga* is the relative density of time, as measured by the span of time within which a

given sequence of musical events is to be completed. In one way or another, all five of these components must be specified when the temporal structure of a musical composition is defined, and none of them is permanently affixed to any of the others. It becomes obvious that this is no simple set of relationships.

This being the case, it is much too simplistic to describe the temporal hierarchy in terms of a single ratio or set of ratios; nor is it clear on what model or models these equations were constructed. One possible model was the three speeds of recitation, defined variously as $1:2:3$ (the short, long, and protracted syllabic durations), $3:4:5$, $9:12:16$, and $16:20:25$.[47] Two ratios in particular permeate the musical system: the arithmetic ratio of $1:2:3$, which arises from the three basic durations of the syllabic state; and the geometric ratio of $1:2:4$, which pervades all levels of musical activity. Both are natural ratios which take no great amount of intellectual effort to discover, but the ratio $1:2:4$ is also widespread in the visual arts and architecture and apparently led to the great engineering advances of the early Indus Valley civilizations when Harappan brick makers discovered the exceptional bonding properties of kiln-fired bricks standardized to these proportions.[48] It may be more than coincidence that the proportions of a great tradition of brick construction were adopted for the regulation of a highly modular system of musical rhythm.

I turn now to the individual standards of measurement. Of the five concepts we have been examining, *mātrā* comes the closest to a fixed unit of measure; the same word denotes the basic unit of measure for Sanskrit verse. Prem Lata Sharma has defined *mātrā* as "a conceptual time-unit that is concretized or manifested in *akṣara* (syllable)," with the useful observation that the relationship is similar to the relationship between *śruti* and *svara*.[49] This traditional line of explanation helps to bring four of our terms into alignment: the syllables (of verse, music, drumming, and dance) and *tāla* gestures are actualized forms, perceptual units that manifest the conceptual units of rhythm (*mātrā* and *kalā*).

By what standard was the duration of the *mātrā* established? In Sanskrit prosody and in the later system of *deśī tālas* the *mātrā* was equated with one short syllable (*hrasva* or *laghu*), but in the ancient system the *mātrā* was clearly a longer unit, defined none too precisely as the time required to blink the eyelids five times or utter five short syllables of text. According to this equation, the three basic durations of the *mārga tālas* are as follows: *laghu* = one *mātrā* (five short syllables), *guru* = two *mātrās* (ten), and *pluta* = three *mātrās* (fifteen). If we recall that the manifold states were organized in long strings of *guru* durations, it is apparent that the tempo

of structural gestures must have been extremely slow, perhaps as slow as M.M. 40. The association of slow pace with ritual music is unsurprising, but no constraints were placed upon either the tempo of surface musical activity or the tempo of musical events.

The term *akṣara* is unproblematic and means nothing more than "syllable" in all possible contexts—a syllable of speech, the letter representing that syllable in any of the traditional scripts, a syllable denoting one of the *tāla* gestures, or any musical unit that can be represented by an uttered syllable: a dance step, a drum stroke, or one of the seven *svaras*. The essential point here is that the syllabic unit, however we define it, has proved such a useful concept for the encoding of musical information: it is unitary, precise, easily remembered and articulated, and firmly rooted in the experience of human language; but at the same time it is flexible in duration and can conveniently represent a complex cluster of musical phenomena. This profusion of syllabic forms is clearly a result of the meticulous phonetic observations of the ancient grammarians. I have argued the role of the syllable in chapter 4 and will not belabor the point here, except to emphasize that the equations among the several types of syllables have often been established in a highly relativistic way: that is, one *tāla* gesture may represent any of the three durations (as in the syllabic state), or a $1:1$ ratio may be maintained between one gesture and one duration (as in the manifold states), or a single unit of *tāla* may subsume a long string of rapidly articulated drum syllables.

The two remaining terms are problematic, but they lie at the core of the ancient concept of musical rhythm. *Kalā* at first glance is especially confusing because (1) only the placement of the macron distinguishes it from *kāla*, the word for time in general (providing Indian authors with a tempting opportunity for clever wordplay); and (2) the word can denote either a specific duration of time or the gesture by which that duration is separated from its neighbors. Let us clear away some of the confusion. In the sense of gesture, *kalā* signifies one of the four silent gestures;[50] in the sense of duration, *kalā* units (defined in terms of 1, 2, 4, or 8 *mātrās*) are used to measure the time span of a *tāla*, a formal unit, or an entire composition. The word *kalā* has a wide semantic range, but the core meaning is "a small part of anything," especially a sixteenth part. Two aspects of this semantic field have proved particularly useful for musical purposes: its flexibility (in representing units of variable size) and its association with the geometric series 1, 2, 4, 8, 16, 32, 64. In a hierarchical system of rhythm featuring the inflation of patterns in an invariant ratio of $1:2:4$, it comes as no surprise to uncover references to this numerical series in the etymologies of important terms.

But to grasp the full meaning of the concept of *kalā,* it is necessary to explore its relationship to the equally problematic concept of *mārga* (path).

To be precise, *mārga* specifies the duration of the rhythmic path, in effect the time within which a prescribed series of musical actions and events is to be completed. An analogy may help. *Mārga* from a Western point of view is a somewhat eccentric way of expressing the concept of tempo, and indeed that is exactly what is intended—as if to say "Sing the national anthem in eight, or in four, or in two minutes, with all the proportions adjusted accordingly." But *mārga* is experienced not as a prescribed length of time but as the relative density of events within that time span. To return to the national anthem, if we were to sing it, tapping the first beat of each measure and making a mental note at the end of each phrase, and were then to render the same song at twice the speed, and then at four times the speed, with every action proportionate within the contracting span of time, we would have experienced the equivalent of *mārga.* We would have sung all the notes and all the words, tapped all the beats, and marked all the cadences. The events of the song, however defined, would have undergone proportional compression, and this is precisely what is meant by the idea of *mārga.* In (20) is a display of the equations between *kalā* and *mātrā* in each of the four *mārga*s:

20. Rhythmic equations in the four *mārga*s

mārga	*kalā*	*mātrā*
dhruva (the shortest)	1	1
citra	1	2
vrtti	1	4
daksina	1	8

This seems innocent enough, but note what has *not* been specified: the rhythmic equations in (20) fix the ratios between the basic unit of measure (the *mātrā,* which is found by convention) and the structural units (the *kalā*s), but not the individual time durations of the *tāla,* which are also variable. It will be evident that the system depends upon a bewilderingly complex set of rhythmic equivalents, almost as if we were to concoct a recipe with an assortment of measuring spoons and cups that kept expanding or shrinking. Indeed the system was overly complex, and it subsequently underwent drastic alteration in response to new musical needs. What helped to restrain its complexity in ancient ritual practice was the stabilizing 1:1 ratio between the *kalā* and the *guru* duration, which was held invariant in the manifold states. If, then, there existed any general standard of

measure, any *pramāṇa,* this was it. Perhaps this is why the major formal structures of the *gāndharva* repertoire appear to have been designed for performance in the expanded versions, a point to which I shall return in chapter 9.

These relationships are summarized in (21). Note in particular the discrepancy between the actual durations of the *tāla* and the underlying framework of conceptual rhythm as expressed in *kalā*s and *mātrā*s.

21. Ṣaṭpitāputrakaḥ *tāla* in the syllabic state and the *citra mārga*[51]

6 *tāla* durations	*pluta*		*laghu*	*guru*		*guru*		*laghu*	*pluta*			
6 *tāla* gestures	S		tā	śa		tā		śa	tā			
6 *kalā*s												
12 *mātrā*s												

It would take us too far out of our way to trace the later history of these temporal concepts through the Indian musicological literature. What can be said in general is that their domains narrowed, their variations became more limited, their mutual relationships became more fixed, and some were reinterpreted. With the advent of the system of *deśī tāla*s, many of them became irrelevant. In the modern traditions of Karnatic and Hindustani music, the concept of *mārga* survives only as a vestige of its former self. In chapter 9 we shall see concrete illustrations of these rhythmic concepts in the diagrams and reconstructions.

8.8 THE *DEŚĪ TĀLA*S

I have referred in previous chapters to the phenomenon of *deśī*—the dynamic expansion of musical resources during the second half of the first millennium; during this time a large number of popular regional traditions were collected, codified, partly homogenized, and set alongside the venerable *mārga* tradition (which in the end they supplanted).[52] In the domain of musical rhythm, this expansion was fully as explosive as it was in the domain of pitch, but the sweeping changes in the system of *tāla* are quite impossible to document from the surviving textual evidence. In fact nothing remains of any of the intermediate stages, and the authors of the medieval period failed to reach a consensus on the number, names, and structure of the many *deśī tāla*s that they recorded. One especially regrettable loss is the sole document which would undoubtedly shed some light on this transition in rhythmic thinking and practice—the lost *tāla* canto of Mataṅga's

Bṛhaddeśī, of which no more than a handful of verses survive, in the form of quotations embedded in later treatises.[53] If and when a manuscript containing this canto turns up, scholars will be standing in line to examine it.

I shall deal with the *deśī tālas* as a "movement" and a set of principles, not an established body of doctrine. As a movement, however, they are of vital importance, for it is from them that the modern systems of *tāla* have evolved. The following may be said about the *deśī tālas*: that they came from many different geographical regions of the subcontinent, that they were more closely associated with song and poetic traditions than with the theater, that many were popular in origin, that in many cases they demonstrate a splintering of the rhythmic flow into an array of short and irregular patterns, that they were allied with the developing practice of improvisation, and that no overarching theoretical framework existed for their classification. Many later authors claim that the *deśī tālas* were derived as the result of various unspecified partitionings of the *mārga tālas*, but the profusion of patterns makes it difficult to validate this claim. While all of the conceptual apparatus of the *mārga* system was available for their classification, most of the deeper structural levels were irrelevant, and the new *tālas* were defined simply in terms of a short, repeatable sequence of durations. Unlike the *mārga tālas*, the gesture language was left unspecified. The trend was toward a range of much shorter durations: *laghu* replaced *guru* as the durational standard, and we see the introduction of three new units shorter than the "short" (*laghu*), in a process not unlike the splintering of rhythmic values and the demand for new notational symbols in the European Ars Nova.[54] The treatises prior to the *Saṅgītaratnākara* refer to them as *khaṇḍa* (split) *tālas*, and it is Śārṅgadeva who was apparently the first to label them as *deśī.*[55]

Thirty such *tālas* are mentioned in the *Mānasollāsa* of King Someśvara. By the time of the *Saṅgītaratnākara* their number had increased to 120, and it continued to swell (to more than 200) in later treatises. From all the evidence, the system seems to have remained in a state of perpetual flux, with some popular *tālas* remaining relatively constant while others drop in or out of the system or reappear under new names or structures. Although the enormous array of patterns resisted all attempts to organize and classify them, the intent seems to have been to authorize all possible permutations of the given possibilities—a leitmotif in Indian musical thought. Nowhere, however, do we find any indication of the selection principles or arguments in favor of some patterns over others. Selection was left for *prayoga* (practice), which in the several stages and branches of India's musical tradition has tended to settle on a fairly limited selection from among the enormous number of choices offered by the theoretical system.[56]

In their search to find authority for the *deśī tālas* in the early literature, later authors have cited a cryptic and much-disputed passage in Bharata's *Nāṭyaśāstra* (31.23–24) which refers to *miśra* (mixed) and *saṅkīrṇa* (blended) *tālas* and mentions units of five, seven, nine, ten, and eleven *kalās*—all the numbers, in fact, that were excluded from the rhythmic ratios of the *mārga* system.[57] The commentator Abhinavagupta attempted to identify units of these irregular lengths in the ritual forms of the ancient musical theater, but the later Indian tradition has reinterpreted this series of "mixed" numbers in the context of repeatable *tāla* patterns, not large-scale musical structure. The results are displayed in (22):

22. The five rhythmic genera (*jātis*)

3	*tryaśra*	triangular
4	*caturaśra*	quadrangular
5	*khaṇḍa*	split
7	*miśra*	mixed
9	*saṅkīrṇa*	blended

In this line of thinking, the terms *khaṇḍa, miśra,* and *saṅkīrṇa* have become conventional tags for the numbers five, seven, and nine. In the modern system of Karnatic music, the names listed in (22) are those of the five *jātis*—expanded versions of the basic *tāla* structures in which a particular *aṅga* (limb) of the pattern is singled out for inflation, with its divisions marked visibly by three, four, five, seven, or nine finger counts.[58] In this manner a simple pattern may be transformed into a much more complex structure. All of this evidence suggests a long-range trend in the direction of increasing asymmetry and rhythmic irregularity, in both the individual pattern and the system as a whole. The relevant point to be extracted is that both the system of *deśī tālas* and the *tālas* of modern South Indian music are, to use Curt Sachs's useful terms, overwhelmingly additive rather than divisive—both in concept and in structure.[59] This is to say that they were, and are, constructed "from the bottom up" in irregular groupings of a lowest common denominator (hence, additive), not "from the top down" in a nested series of even divisions of a highest common multiple. Among all the large culture areas of world music, India is in this sense unique—not so much in her exploitation of additive rhythms as in the development of an appropriate theoretical framework for their codification.

It is clear that the *deśī tālas* were more than abstract patterns of durations, although only the durations have been recorded. Certain *tālas* are identical in structure and must have been differentiated by tempo, gesture, or some other means. Another problem arises in connection with several

*tāla*s consisting of a string of equal durations: four shorts, five shorts, four longs, and the like. Since there was no pattern irregularity to bring forward the unique structure of the *tāla*, Sharma speculates that some definition was introduced in performance in the form of (1) the conventional alteration of one of the units; (2) the gesture sequence; or (3) in a development that seems to have occurred not earlier than the fourteenth century, devising a string of drum syllables to represent the distinctive substructure of each of the *tāla*s.[60] The tradition of reciting drum syllables is very old and appears in the *Nāṭyaśāstra*, but the attempt to capture the essence of a *tāla* with a unique set of syllables—which has become the standard practice in modern Hindustani music—belongs to the later history of the *deśī tāla* system.

Although the gesture language of the *deśī tāla*s has not been recorded in the shastric literature, we note a relevant trend. In the chironomy prescribed for the *mārga tāla*s, an audible gesture signaled the end of a *tāla* unit, with silent gestures prefixed as needed to represent the structural durations of the two expanded states; but in the *Saṅgītaratnākara*, Śārṅgadeva outlines an alternate set of eight gestures (23):[61]

23.

dhruvakā:	an audible handclap
sarpiṇī:	hand moves to the left
kṛṣṇā:	hand moves to the right
padminī:	hand moves downward
visarjitā:	hand moves "outward"
vikṣiptā:	hand moves "inward"
patākā:	hand moves upward
patitā:	hand falls to the knee or ground

The apparent purpose of these gestures was to demonstrate visibly the *mārga*, that is, whether each *kalā* consisted of one, two, four, or eight *mātrā*s.[62] *Dhruvakā* was always the initial, *patitā* was always the final, and the rest were inserted in regular sequence in the number needed. The essential feature here is that the *beginning* of the rhythmic unit is now marked by an audible gesture; the remaining seven are treated as suffixes that maintain the extended duration of the cycle with motions not unlike those of a modern conductor. With this innovation in the gesture language, we see the roots of the modern *tāla* practice of North and South India and most likely the system of chironomy by which the *deśī tāla*s were controlled.

In this and earlier references in this chapter, readers will not have failed to note the significant role assigned to the silent gestures. The tradition may be traced both backward and forward in Indian history: back to the style of Vedic recitation in which a gesture known as *śūnyahasta* (empty-handed)

was used to mark certain conjunctions or pauses in the text, and forward to the *khālī* (empty) wave that plays a prominent role in today's Hindustani music.[63] In the present context it seems safe to infer that the beginning member of each *deśī tāla* cycle was marked by some audible gesture (and probably the beginning members of some of the internal divisions in the more complex *tāla*s), while some appropriate combination of silent motions helped to control and delineate the structure of the *tāla*.

It remains to examine a representative sampling of these patterns and assess them as a whole. In connection with the *mārga tāla*s I cautioned against the inference that their structural patterns could be expected to appear in diminution in the flow of surface rhythm. In the shorter patterns and range of durations of many of the *deśī tāla*s, we are clearly closer to the rhythmic surface. But once again it cannot be assumed that these patterns represent the fastest stream of performed rhythm. Nevertheless, they are a source of valuable information on some of the most vital aspects of rhythm in music: the preferred sequences of durations, the equilibrium of various patterns, pattern length, internal structure, and preferred ways of beginning and terminating patterns. The deductions which I draw in the following discussion are based on the listing of 120 *deśī tāla*s in chapter 5 of the *Saṅgītaratnākara*.[64] The symbols to be used and their equivalents are shown in (24), in which all durational values are either divisions or multiples of whatever value is assigned by convention to *laghu*.

24. Durations in the *deśī tāla* system

Name	Symbol	Relative length	In Western notation	Duration
pluta	P	3	♩.	protracted
guru	G	2	♩	long
laghu	L	1	♪	short
druta	D	$\frac{1}{2}$	♫	shortest
virāma[65]	V	$\frac{1}{2}$ or $\frac{1}{4}$	.	a fractional extension of L or D

The most interesting aspect of this series of durations is the concept of *virāma*, which may be compared to the familiar augmentation dot of Western staff notation. *Virāma* was evidently not regarded as an independent

rhythmic unit with a value of its own, but it may at times have provided an internal caesura or a pause at the end of a pattern. Whether its role was extension, punctuation, or termination, *virāma* is often the element that turns an otherwise regular pattern into an asymmetric construction with a time span that cannot be measured in a whole number of *mātrā*s.

Much can be deduced from the assortment of *tāla*s whose durations are encoded in such cryptic form in the *Saṅgītaratnākara*. Most important of all, the list does not represent a logical set of exclusive permutations, no matter what way we choose to examine the specifications for the 120 *tāla*s. There are numerous and obvious omissions, duplications, and puzzling anomalies in the list. The conclusion must be that we are presented with a large selection of raw data which has not yet been subjected to theoretical leveling and systematic organization, a process that was to take many centuries and was never completely successful.

First some statistics. With respect to the number of units, the *tāla*s range from a single member to as many as twenty-two (Miśravarṇa: D D D D V D D D D V D D D D V P G D D G L G). In terms of the total number of *mātrā*s (L), they run from one-half (Ekatalī: D) to as many as thirty-two in the massive Siṁhanandana: G G L P L G D D G G L P L P G L L, concluding with four silent L durations.[66] Short patterns do not dominate the list to the extent we might expect (25):

25.

Number of units	Number of *tāla*s
1	3
2	7
3	15
4	26
5	31
6	15
7	12

How systematic is this array of *tāla*s? Let us examine some of the shorter patterns in an attempt to see how closely they approach a set of exclusive permutations. Four *tāla*s occupy a span of two *mātrā*s: G, DDDD, DDL, LDD; the obvious omission is LL. Five *tāla*s span three *mātrā*s: LG, DDLL, LLDD, and two of DDG; if an iamb, why not a trochee? Twelve *tāla*s occupy four *mātrā*s: two of LP, three of DDLG, and one each of LLG, LLLL, LDDG, LGDD, DDLLL, DDDDG, and LLDDDD. Even in this limited selection we can note a tendency to conclude with a longer duration, which provides a ca-

dence of sorts. This tendency is typical of the list as a whole: twenty-six end with *pluta,* but only two begin with this duration; *guru* is more frequent at the end (thirty-seven) than at the beginning (twenty-six), but not by such a dramatic margin. On the other hand, thirty-five *tāla*s begin with *druta,* but only sixteen end with this duration.

There are clear signs of internal organization in the longer and more complex patterns, as demonstrated in the two I mentioned above. Miśravarṇa, as outlined in (26), falls readily into three statements of the same sequence plus an irregular string of durations at the cadence. Siṁhanandana can be analyzed into a fairly regular duple or quadruple meter and is given additional definition by a significant internal repetition of the Caccatpuṭaḥ pattern: G G L P.[67]

26. Two *deśī tāla*s

The shorter patterns, on the other hand, do not share this tendency toward internal organization: only three of the *tāla*s consist of a single repeated pattern, in effect a double foot. Eleven are palindromes, continuing the tendency we noted in the five *mārga tāla*s.[68] Many of the *deśī tāla*s are described in the cryptic language of the trisyllabic metric *gaṇa*s, a system of encoding that we shall presently explore in an attempt to discern the possible influence of poetic meters on this array of rhythmic patterns. The point I wish to make here is that the set of 120 *deśī tāla*s fails to reflect any significant influence of this code; that is, it reveals no underlying tendencies toward "threeness" or consistent sequences of any of the eight possible trisyllabic permutations of L and G.

To pursue this point, it will be useful to investigate the total pattern length in terms of *mātrā*s. Of the 120, 85 consist of a whole number of *mātrā*s, 35 of a fraction. Of the former, 35 *tāla*s occupy a total number of *mātrā*s that falls within the numerical series 1, 2, 4, 8, 16, 32; only 21 occupy a span within a ternary series of numbers, and most of these do not qualify as triple meters because of their internal structures. Fourness is more typical

of this repertoire, with respect to both total length and internal division, but it is a fourness marked by considerable irregularity in contrast to the standard binary rhythms of modern Europe or the foursquare rhythmic grids of East Asia.

I conclude with a selection of typical *tāla* patterns of intermediate length, from which additional conclusions may be drawn (27). Two obstacles, among many, hinder our full understanding of how this repertoire may have been performed: we do not know the gesture sequences, and we have no evidence that indicates which *tālas* were popular, which were not, and which may have been purely theoretical concoctions. Some inferences can be drawn on the basis of modern practice and the evidence of treatises written several centuries later, but I remain suspicious of applying the praxis of a later, settled phase of a musical tradition to the textual remains of an earlier, formative phase.

27. A selection of *deśī tālas*

Abhinanda	5 *mātrās*	L L D D G	♫ ♬ ♩
Bindumati	6	G D D D D G	♩ ♬♬ ♩
Candrakalā	16	G G G P P P L	♩♩♩♩. ♩. ♩. ♪
Dīpaka	7	D D L L G G	♬♬ ♩ ♩
Gauri	5	L L L L L	♩ ♩ ♩ ♩
Jaya	9	L G L L D D P	♪♩ ♫ ♬ ♩.
Nissaṅka	13	L G G P G G L	♪♩ ♩ ♩. ♩ ♩ ♪
Pratimanthaka	8	L L G G L L	♫ ♩ ♩ ♫
Raṅgābharaṇa	9	G G L L P	♩ ♩ ♫ ♩.
Tryaśravarṇa[69]	5	L L D D L L	♩ ♩ ♬♬ ♩

8.9 THE INFLUENCE OF METRICS

In this section I focus upon an issue that cannot be avoided in any attempt to trace the early development of musical rhythm: to what extent have the rhythms of speech and poetry left their marks upon the rhythms of music? I am assuming that this is a universal process, deeply rooted in human history, and that the evolution of formal systems of musical rhythm can be interpreted as an increasingly more complex dialectic between the patterns of intoned language and the regularly pulsating rhythms of the human body. Language patterns offer a set of cultural models for the grouping of tones, models that have been authorized by long habit and a literary tradition; body rhythms provide means of entraining these groups into an organized stream of sound. The process is not fully understood, and efforts to understand it are continually frustrated because we lack most of the evidence for its formative stages.

My argument, in brief, is that while traces of ancient Indian poetic meters can be detected here and there in the structural patterns of the various *mārga* and *deśī tālas*, their influence is most evident in the intermediate levels of musical structure, that is, in the organization of lines, phrases, and stanzas—not in the individual patterns per se nor in the longest spans of musical structure. If my contention is correct, then Indian musical rhythm managed to free itself from the surface patterns of poetry at a very early date, in striking contrast to the music of ancient and medieval Europe, which remained largely dependent upon the modal rhythms of Greek and Latin verse until the fourteenth century.[70]

For a convenient summary of the evolution of metrical principles in early Indian verse, I turn to the writings of H. D. Velankar, whose account of this process is generally respected and widely accepted.[71] In his interpretation of the evolution of Indian poetry from syllabic to quantitative and then accentual verse, Velankar has identified three distinct stages: first, a music of "voice modulation," followed by a second stage in which the music of "sound variation" was the guiding principle, and finally a music of "time-regulated accent." In (28) the main characteristics of each of the three stages are summarized; this will provide a frame of reference for the following discussion.

This summary (28) is admittedly an oversimplification of Velankar's interpretation, in that it fails to include the intermediate stages and refinements of this complex process, for which he has provided explanations and illustrations. In his view, the tonal accents and voice modulations of Vedic

28. The evolution of Indian verse according to H. D. Velankar

Vedic and post-Vedic verse	Classical Sanskrit and the early Prakrits	Later vernaculars and popular verse
A music of "voice modulation" (svara-saṅgīta)[72]	A music of "sound variation" (varṇa-saṅgīta)[73]	A music of "time-regulated accent" (tāla-saṅgīta)[74]
Syllabic verse, measured in akṣaras and featuring tonal accents	Quantitative verse, regulated by fixed sequences of long and short syllables	Accentual verse, with regularly spaced stress accents
The Sāmaveda tradition	The classical kāvya tradition (lyric poetry)	Epic verse, popular song, and the accompaniment of dancing
Syllable quantities not fixed	Syllable quantities fixed and prescribed in terms of the trisyllabic metric gaṇas[75]	Measured in "time moments" (kāla-mātras) with an invariant ratio of 1:2 between the short and long
Lines and stanzas of variable length, with irregular caesura (yati)	Stanzas of four identical lines, with regular caesura dividing the line into unequal members	Parallel couplets with regular stress after each fourth, fifth, sixth, or seventh mātrā

verse eventually became the basis for the pitch structure of the various *rāga*s, just as the later *tāla* systems of Indian music evolved under the influence of the stress accents in the "time-regulated" tradition of popular-vernacular poetry. This line of argument is not without precedent and cannot be far off the mark, but his explanation offers no clues to the earlier development of rhythm in the *mārga tāla* phase. Readers may, as I do, detect a loose parallel between the *mārga* and *deśī* stages of *tāla,* on the one hand, and the *varṇa-saṅgīta* and *tāla-saṅgīta* stages of verse, on the other. But the case is difficult to build and is vulnerable to many objections, not the least of which is the problem of tracing some cause-and-effect relationship between a body of poetry and a musical repertoire that may have been influenced by it. The evidence is entirely circumstantial. The regularly recurring cycles of the *deśī tāla*s would appear to be more amenable to regulation by stress accent, just as the prescribed gesture language and proportions of the *mārga tāla*s may suggest a parallel to the fixed syllable sequences that are typical of classical Sanskrit verse. But I am reluctant to claim anything more than a loose historical parallel between these closely associated traditions of performed rhythm. The impact of poetic rhythm is indisputable, but it seems better to view it as a long process of gradual pressure and mutual feedback rather than as the direct influence of a particular body of metrical verse upon one specific phase in the development of musical rhythm.

Classical Sanskrit metrical theory offered a convenient system for the encoding of musical durations, a code that was adopted by Mataṅga and his successors. As usual, some of the distinctive features of a code may have found their way into the message. To represent the various sequences of short and long syllables, the metrical scholars devised the mnemonic formula *Ya mā tā rā ja bhā na sa la gaṁ,* in which each of the first eight syllables represents the first syllable of a unique trisyllabic group (each syllable is assigned a short or long duration as indicated by the presence or absence of a macron above the vowel).[76] These trisyllabic groups are the *gaṇa*s or *trika*s, and they constitute the eight possible permutations of short and long durations. To accommodate metrical lines with syllable totals other than multiples of three, the final two syllables of the formula represent single *laghu* (short) and *guru* (long) durations. Thus, a line of iambic tetrameter ($4 \times \cup -$) would be expressed as *ja rā la gaṁ* (LGL + GLG + L + G).[77] The durations of the formula and the eight *gaṇa*s are displayed in (29), together with their Greek equivalents.

29. The Sanskrit metrical code

the formula: *ya mā tā rā ja bhā na sa la gaṁ*
durations: L G G G L G   L L L G

Name of the *gaṇa*	Formulaic name	Pattern	Greek equivalent
candra (moon)	*bha-gaṇa*	GLL = −∪∪	dactyl
svar (heaven)	*na-gaṇa*	LLL = ∪∪∪	tribrach
anala (fire)	*rā-gaṇa*	GLG = −∪−	cretic
vāyu (wind)	*sa-gaṇa*	LLG = ∪∪−	anapest
ambara (sky)	*tā-gaṇa*	GGL = −−∪	antibacchius
mārtaṇḍa (sun)	*ja-gaṇa*	LGL = ∪−∪	amphibrach
bhūmi (earth)	*mā-gaṇa*	GGG = −−−	molossus
jala (water)	*ya-gaṇa*	LGG = ∪−−	bacchius

L = *laghu* (short); G = *guru* (long)

Two obvious questions arise: Why groups of three syllables, not two or four? And what have been the implications, if any, of all this "threeness" for poetry and music? There are occasional references in the music literature to *gaṇa*s of two and four units that provided a basis for permutations of di- and quadrisyllabic groupings, but they never mounted a serious challenge to the overwhelming preference for threeness in encoding syllabic durations.[78] Velankar's explanation is grounded in cultural ideology:

> In ancient India, number 3 was generally admitted as the small-est among the large and largest among the small numbers. It was adopted as the smallest unit for developing multiplicity. Thus, the smallest unit for the evolution of the manifold world in the theory of the Sāṅkhyas was the triple Pradhāna consisting of 3 guṇas, while it was the Tryaṇuka made up of 3 Aṇus or Dvyaṇukas, in the theory of the Vaiśeṣikas. The three states of life, Utpatti, Sthiti and Laya were considered as the basis of the diverse condi-tions of life by the Vedāntin. The three times, past, present and future, are the foundation of a convenient distribution of the ever-changing phenomenon of time. The three basic accents, high, low and middle, are sufficient to describe the many differ-ent modulations of voice[79] and the same is true of the three worlds, the upper, the lower and the middle. . . . So, both as a matter of principle and for the sake of convenience, a new unit of three letters called Trika, having 8 different forms of music or rhythm, was adopted for metrical scanning and also as a basis for defining the many different varieties of sound-variation pro-

duced by the alternation of short and long letters in different ways that constituted shorter or longer metrical lines in classical Sanskrit metres.[80]

It cannot be disputed that this habit of thinking in threes is not only deeply rooted in Indian culture but is also ideally suited to a mnemonic code. It may also be among the reasons why Sanskrit verse, unlike Greek or Latin poetry, does not depend upon such binary principles as responsion or the opposition of arsis and thesis.[81] In the classical Sanskrit *kāvya* tradition the longer lines, which are closer to the lyric than to the stichic meters of ancient Greece, seldom fall neatly into a regular series of identical metric feet, and indeed there was no conceptual basis for identifying such a foot.[82] The trisyllabic *gaṇa*s are little more than a convenience of notation, caesura often occurs in the middle of a *gaṇa,* and no organizing principles were devised for the grouping or opposition of *gaṇa*s within a poetic line. Some-times the *gaṇa* notation actually serves to conceal what to the Western ear would appear to be a simpler pattern: an iambic line of any length would be expressed in pairs of *ja rā gaṇa*s, that is:

$$\text{LGL} + \text{GLG} + \text{LGL} + \text{GLG} = \cup-\cup-\cup-\cup-\cup-\cup-.$$
ja   rā   ja   rā

This meter is among the fifty-five meters with twelve-syllable lines cited by the classical metricians, and it appears to have been fairly popular.[83] But which of its organizing rhythms would have come forward in composition and in recitation is an open question. The sequence of *gaṇa*s would surely have crossed the poet's mind, and the regular alternation of short and long syllables would just as surely not have escaped his notice. In all probability the verse he fashioned would have pulled against both of these underlying rhythms in a rich counterpoint. The longer the line, the more likely that caesura would be prescribed; but this meter has none. Of the twelve-syllable lines with obligatory caesura, we find occasional divisions into 6 + 6, but more often 7 + 5 and 8 + 4, with no obvious preference for placing the longer member at the beginning or end of the line. In their sequence of durations, many if not most of the popular poetic meters are fully as asym-metric and additive in construction as the *deśī tāla*s. It seems inescapable that the superimposition of these two rhythmic layers—the metrical pat-terns of verse and the rhythmic patterns of the substratum of *tāla*—would have encouraged an active rhythmic counterpoint.

Poetic lines of eight, eleven, and twelve syllables dominate the verse of the Vedic period, but later classical poets favored even longer lines. The

metrical treatises mention nineteen different possibilities for lines of seventeen syllables. Of these perhaps the most famous is Mandākrāntā (literally, the "slowly advancing"), the meter in which Kālidāsa cast his masterpiece *The Cloud Messenger* (*Meghadūta*):[84]

$$ \_\ \_\ \_\ \_, \cup \cup \cup \cup \_, \_ \cup \_ \_ \cup \_ \breve{\cup} $$

G G G G L L L L L L G G G L G G G L G G

mā   bhā   na   tā   tā   ga ga

After performing such a line with the obligatory caesuras, it is difficult to detect any traces of the underlying metric *ganas*, especially when the same *gana* (*tā*) is repeated in such a radically different rhythmic context. The organization of the line is clearly by members, and it is articulated by the caesuras; each of the three members displays a unique sequence of syllable quantities and thereby presents a distinct challenge to the poet's craft. The pattern contains no discernible traces of either threeness or fourness, or indeed of any overall organizing rhythm. Perhaps the best way to make sense of the profusion and persistence of asymmetric sequences is to regard them, in Velankar's words, as "fossils":

> It is interesting to note how the introduction of a Yati [a caesura] in the metrical lines helped the formation and fossilization of many different metricomusical units of varied length. . . . These fossils cannot be easily recognized by merely looking at the definition of a metre, which is couched in the terms of the Trikas; but they can be easily felt and identified when the line is actually recited or heard. Sometimes, it is found that the whole line of a metre is made up of 2 or 3 of these fossils pieced up together.[85]

It seems inescapable that a similar process of fossilization was responsible for the preservation of many of the wildly irregular rhythmic patterns in the domain of *tāla.*

If the lines of classical Sanskrit verse surpass the lines of the Greek lyric both in length and irregularity, the Sanskrit stanza is a model of regularity and simplicity. With certain significant exceptions, the stanza with four identical lines dominates the *kāvya* repertoire. It is this sense of regularity at a deeper level of poetic structure that we find paralleled in the larger formal structures of *tāla,* especially in the typical division of a formal unit into four *pādabhāgas.*[86] It is clear that the rhythm of strophic division was a powerful influence in shaping the internal divisions of musical forms. But,

lest we make too much of this, it could scarcely have been otherwise within a culture that placed such high value on vocal music and the delivery of a poetic text.

The status of *pluta,* the "protracted" or "floating" duration (three times the length of a short syllable), is markedly different in music and verse. In classical metric theory, *pluta* did not exist as an independent duration, although much the same effect may have been produced when caesura followed a long syllable. As I mentioned earlier, *pluta* occurs but three times in the entire *Rgveda* and fifteen times in the *Atharvaveda.*[87] It is always located at the end of a word, phrase, or line, and its evident purpose was to emphasize that final unit. *Pluta* is used, according to Whitney, at the end of a question, when calling to a distance, or to signify urgency, and it usually carries the acute tone.[88] Here is one important instance in which stress, tonal, and agogic accents coincide, revealing the same tendency toward end accent that will become even more apparent in the formal structures of *tāla.* In the *mārga tāla*s, *pluta* occurs with much greater frequency than in verse and is deployed both at the beginning and the end of patterns, with a definite preference for the latter. But this duration proved difficult to accommodate within the 1:2:4 ratio by which the manifold states of the *tāla* system were generated, so its primary role was as a structure marker in the syllabic states. With the rise of the *deśī tāla*s, however, the role of *pluta* became greatly expanded, and its divisions became the basis for a series of new fractional note values: that is, halving and quartering the duration of *pluta* produced new units of three-halves and three-fourths the value assigned to *laghu.* With its influence thus spread throughout the rhythmic system, *pluta* appears to have discarded most of its former tonal, accentual, and cadential implications and remains as just another number.

I have tried to trace the presence and influence of "deep numbers" in early Indian verse and music, with only limited success. But the issue is an important one and goes far beyond detecting traces of threeness and fourness. The principle of deep numbers—and with this expression I am attempting to suggest an analogy to the deep structures of linguistics—must be recognized as one of the basic means of building and recognizing large-scale musical forms, and I will argue the point in chapter 9. While the deep numbers embedded in Sanskrit verse are generally either a notational convenience or a conventional pulse that can be easily overridden in performance, in the ancient system of *tāla* they become a prime means of manifesting formal patterns and proportions at various hierarchical levels of musical structure.

8.10 THE RHYTHMS OF INDIAN MUSIC

The essence of Indian musical rhythm is the interaction of independent rhythmic strata, controlled by gesture and manifesting a dense counterpoint of patterns and implications. At least four such strata can be identified in the simplest composition or performance: the metrical sequence of text syllables, the structural gesture patterns of the *mārga* or *deśī tālas*, the melodic rhythm (vocal or instrumental) with its profusion of ornaments, and the accompanying patterns of the drummer. With a rhythmic texture of such potential complexity, problems of coordination and synchronization—such as *pāṇi* and *yati*—would inevitably have become preoccupations of the musical thinkers and would eventually have found their way into the conceptual apparatus of the musical system. But the primary means of coordinating and integrating all musical activity was the gesture language of *tāla*.

We have little evidence for the way in which text, melody, and rhythm were combined. In the ritual structures of *gāndharva*, the text was subservient to both the pitch and rhythmic dimensions, and therefore its own metric structure was easily overridden by the patterns of the *mārga tālas*.[89] But in the freer plot songs of the early theater and the later tradition of independent song (the *prabandha*s), the metrical structure of verse became an independent stream of rhythmic activity—to which the shorter, repetitive patterns of the *deśī tāla*s were added as a continuous undercurrent. Precisely how this was accomplished must remain a matter for speculation, although as always, certain inferences may be drawn from modern performance practice.

We do not know, for example, whether the *tāla* cycle and the metrical line occupied exactly the same period, coincided at the beginning or the end of the line, or were entrained in some other way. Nor do we know just how the poetic caesuras would have been performed nor what their exact value would have been. Common sense suggests that the *tāla* cycle was performed as a continuous rhythmic background, filling in the pauses for caesura and the various cadences at the ends of lines and stanzas, over which the vocal line would become entrained—often, perhaps, beginning at a later point in the rhythmic cycle. If these assumptions are correct, the two rhythmic strata interpenetrate in a rich tangle of implications and patterns that compete for our attention, and the frequent points of confluence are experienced both as stability and as accent. Against these two streams of structural rhythms, the faster and sometimes irrational melodic rhythm and the drum rhythms will be perceived as variations superimposed upon a rhythmic

ground—at times closely coordinated, and at other times developing independent patterns that cut across the established structural patterns and cycles.

My discussion has focused on the role of *tāla*, and readers should be reminded that an equally important and characteristic form of temporality in Indian music is the free genre of unmeasured rhythm that was known as *ālāpana*, the most significant beginning gambit in the music of the subcontinent.[90] Free from the constraints of *tāla*, lacking the rhythmic layer provided by the drummer(s), and in many cases lacking even the metrical structure of a text, the primary models for the time of *ālāpana* were the inner rhythms of the human body—in particular, the rhythm of the breath.

I have attempted to organize the complex evolution of rhythmic thought and practice in terms that are admittedly more simplistic than what actually happened. Within the time constraints of this study, I have pointed out a historical development in two grand stages: from *mārga* to *deśī*, theatrico-religious ritual to entertainment, strict to (relatively) free, Sanskrit to vernacular, central to regional, composed to improvised, modular to cyclical rhythm. History is never this simple, but the picture is not distorted. The constant factors in this development have been the controlling system of hand gestures and the loose collection of principles by which the system was regulated—many of which were reinterpreted to suit later practice. In the process, forms became less complex, patterns became shorter, rhythms became more repetitive, the range of activity within any single rhythmic layer became more complex, the interactions between the several rhythmic strata became somewhat simpler, and standards of measure which were once variable became fixed. None of this should be in any way surprising; we could apply much the same interpretation to the early development of rhythm in medieval Europe.

New musical needs arose, and the conceptual structure of music was revised in response to the developing practice of improvisation. The most obvious result was the institution of the rhythmic cycle as the single most important principle of musical structure. I view this development as the consequence of a long-standing cultural preference for circularity, a preference that was already so clearly expressed in the *Atharvaveda* hymn to time. The wheel of the sun chariot has become not only the Buddhist wheel of law but also the turning wheel of musical rhythm. It is no accident that the word for cycle (*āvarta*) and for a poetic meter (*vṛtta*) both mean "a turning."[91] This is how any process operates in the traditional Indian worldview—not by linear progression, but by turning and returning. With the rise of cyclical rhythm, many of the higher levels of musical structure (which we

are about to examine) became irrelevant, and the overall form of Indian music became less hierarchical and was guided more by certain deep-seated formal archetypes. Music, we may say, became more a process than an object. The results have had implications that go far beyond the purely musical or the conceptual; they have profoundly affected the role of the individual musician within the fabric of Indian society.

In this as in previous chapters, I have pointed out ways in which musical organization has reflected the constant pressures of cultural ideology—in this case, how the system of *tāla* and the evolving concept of musical rhythm appear to manifest cultural intuitions of time. Among the more obvious are the ritualistic gesture language for the control of time, the plurality and mutability of temporal forms, the special value assigned to the negative aspects of rhythm (that is, to silence, inaudible gestures, and the intervals between rhythmic events), the essential relativity of the cluster of concepts that mutually define all musical timing, the organization of rhythm into repetitive cycles, and the precarious equilibrium which the Indian musician strives to maintain in the midst of a world of shifting forms and multiple perspectives.

N I N E

FORM

As the wind, which is one, on entering creation, conforms its own form to the form of each being, so also the One, the *ātman* within all beings, assumes all forms, yet exists outside.

Kaṭha Upaniṣad 5.10[1]

Form is not what one should desire to understand; one should know the knower of form.

Kauṣītaki Upaniṣad 3.8[2]

9.1 INTRODUCTION

Nowhere in Indian culture is there to be found any clearer demonstration of the influence of traditional ideology upon artistic practice than in the realm of form. The Indian line of thinking on the nature of form and its relationship to substance is of great antiquity and has developed into a distinctive way of seeing and hearing the world. This chapter is an investigation of both form in music and the characteristic forms of music, internal organization and external design, building upon the concepts analyzed in chapter 8 and proceeding to an examination of the longer spans and deeper structural levels of the musical hierarchy.

Form in Indian music belongs to the domain of *tāla,* and indeed it can have no other proper home. In the musical tradition of Europe, the organization of pitch—in response to the inherent tensions and implications of the principle of harmonic tonality—has become the most powerful agent of musical form, with the significant exception of strophic and variation forms. But the structure of Indian music, from early times, has arisen from and depended upon the rhythmic impulses, energies, and implications manifested in the gesture language of *tāla*. Form in Indian music is often articulated and clarified by means of pitch, but it does not depend on it.

The thinkers of early India drew a sharp distinction between the *dṛṣṭa* and the *adṛṣṭa:* by *dṛṣṭa* (the seen) they meant the external world of phenomena and the illusions of *māyā;* they regarded the *adṛṣṭa* (the unseen) as the pathway to essential reality, via the internal world of concepts. The