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The time of music and the time of history

MARTIN CLAYTON

Introduction

What relationships exist between the time of music and the time of history? The question is a tantalizing one: the timescales involved are utterly different, and yet, somehow, we manage to adjust both to a common measure of human thought and discourse. They cannot be compared, but at the same time we seem compelled to do so. Might musical time map onto historical time in some meaningful way? In what sense does musical time have its own history? Might some music, by virtue of its time organization, lie outside of global historical narratives, or resist the advance of modernity? This chapter considers the juxtaposition of musical and historical times, their interpenetration in the discursive realm, and the lessons of this process for our understanding of both.

The chapter is illustrated through a number of examples, but makes reference throughout to North Indian *rāga* music. The issues of time at the core of the chapter have, in fact, a particular resonance in the Indian context, where homologies between structures on very different timescales have been suggested, and have consolidated notions of music as a symbolic representation of a traditional Hindu cosmology, reinforcing along the way the idea of an essential difference dividing East and West. In this chapter I contest the traditional Indian view, but also honor its significance, since the very fact that commentators are drawn to make such assertions is evidence both of the power of the imagination in comparing the incommensurable and of the strength of the ideological imperatives that motivate them – while music's resistance to such schemes confirms the failure of knowledge fully to constrain practice. By asking my initial question in a spirit of criticism and with reference to both musical reality and ethnographic study, I aim to demonstrate how time in all its dimensions and scales is fundamental to the experience and meaning of music. In the next section I set out in detail the kind of arguments that have been made regarding the symbolic function of musical time, with particular reference to India, and outline some problems with these arguments. In order to prepare for a more substantially founded approach to the issue of time and

music, the third section discusses some relevant arguments in the main disciplinary contexts of relevance here, namely history, anthropology, and psychology. In the final section I offer an alternative reading of a typical rāga performance, and start to develop a model of the relationship between musical and historical time.

Temporal symbolism in Indian and other musics

Symbolic readings of Indian musical time

In the following section I outline some of the claims made that music symbolizes basic cultural ideas regarding processes occurring over much longer time-scales. I concentrate particularly on the idea that Indian music symbolizes cosmological processes – here it is necessary to go into some detail in order to make my argument fully – referring also to related cases in other musical traditions. The Indian examples illustrated below, and others to varying degrees, can be described as homology theories (since they propose similar structures in different domains), or as claims of iconicity (since they concern resemblance between these forms). I argue that temporal processes on different scales can refer to each other iconically only when their forms are mediated – for instance, through representation as either “linear” or “cyclical” – since human beings cannot perceive these relationships directly.

The first of three sets of work considered here for their attempts to effect mappings between Indian cosmology and music is a paper by Such and Jairazbhoy. Their analysis begins from the premise that Indian time is cyclical and “ince music is symbolic and reflects the conceptual structures and organization of a community, one would expect to find similar cyclic structures in certain aspects of Indian music” (Such and Jairazbhoy 1982, 105). The authors find such structures – identified outside music in the concept of the yuga (era or “world-cycle”) – first in tāla (meter), whose principles “contrast sharply with the rhythmic principles of most western music” (*ibid.*, 106). They go on to invoke the concept of reincarnation, comparing “a single tala cycle . . . to a single human life” and “successive cycles of the tala . . . [to] the successive lives experienced by the individual soul” (*ibid.*, 106–7). A complete rāga performance, beginning and ending with the drone, can accordingly be seen as cyclic on a grander scale.

Simms proposed an equally detailed reading of cyclicity in Indian music, based on the premise that “virtually all aspects of Indian culture are founded upon knowledge of the transcendent, metaphysical order” (Simms 1992–3, 67); his reading of North Indian musical forms aims to illustrate “the unusually high degree to which they exhibit a formal symbolism of

Hindu cosmological doctrine” (*ibid.*, 67–8). Again, the key concept is yuga, according to which doctrine the manifested cosmos “descends” through accelerated periods (respectively 4, 3, 2, and 1 units of 432,000 years), the descent representing increasing separation from the Absolute. (The most clearly elaborated form of yuga doctrine describes this as a linear process: larger measures do exist, however, implying the cyclic repetition of the entire mahayuga of 4,320,000 years.) The key mapping to musical form invokes a typical performance in the dhrupad genre, in which the start of the alap corresponds to “the primordial *kr̥tayuga* state of near identity with the Absolute at the onset of manifestation”; the subsequent *nomtom* section “perhaps reflecting the tendencies of the *tetrayuga*: an increase in separation (cf. with extended tonal ambitus) and solidification (rhythmic density) resulting in a faster pace of activity.” Finally a fixed composition, the introduction of *tāla*, and acceleration all symbolize the transition “from the serenity of the *kr̥tayuga* to the speed and complexity of the *kaliyuga*.” The terms here refer to the first, second, and fourth yugas: the third, *dvaparyuga*, is introduced later as an analogy to the transition from slow to fast composition in the (historically later) *khyal* style. Finally, the beginning and end of the performance both comprise “silence – symbol of the absolute”: Simms is careful to point out that only silence, not the drone, can symbolize the absolute (*ibid.*, 76–9).

Lewis Rowell’s contributions in this area are both more detailed and more critical (and therefore harder to summarize). In an early article, he argues that “the cyclic organization of the underlying *tāl* is a microcosmic parallel to the macrocosmic cycles within which Indian time unfolds” (Rowell 1981, 207). In his later work, the symbolism is deeper:

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. (Rowell 1992, 186)

These four authors, then, present a range of interpretations of the “cosmic symbolism” idea, which are clearly distinguishable (Table 31.1).

Interestingly, Indian-based musicologists seem to have been more circumspect in their claims on this point. Deva describes *tal* as “cyclic,” invoking the “feeling of ‘coming back’ to the origin, [due to which] the arrangement becomes repetitive or cyclic; for it is only in a circle that one returns to the beginning” (Deva 1974, 38). Still, he neither claims this as cosmic symbolism

Table 31.1 *Interpretations of cosmic symbolism*

Such and Jairazbhoy	<i>Tala</i> cycle = Human life; Performance = Successive lives of an individual
Simms	Performance = <i>Mahayuga</i> ; <i>Alap</i> , <i>nomtom</i> , composition relate to different <i>yugas</i>
Rowell	<i>Tala</i> cycle = <i>Yuga</i> ; Gesture and Breath represent Outer and Inner time respectively

nor implies a profound difference from Western music. Chaudhary discusses the same issue in her study of meter and form, combining elements of circular and linear images:

The āvartana [cycle] of tāla bears similarity to the circle since we return to the... starting point. The measuring of time is the main purpose of tāla and, since the time which has been elapsed in one āvarta[na] of tāla cannot be recaptured, there is a forward movement in time, as a result of which there is a “cycle” of tāla, not a “circle”. (Chaudhary 1997, 35)

Again, no claim is made regarding essential difference or cosmic symbolism. In fact, the notion that Indian musical time needs to be explained in terms of cosmological symbolism seems to be, primarily, a phenomenon of twentieth-century ethnomusicology.

I have previously offered a critique of these notions in the Indian case, which I shall not reprise in detail here (Clayton 2000, 15ff.). A few of the objections I raised previously can, however, be summarized as follows:

- Cyclicity was not noted as a feature of musical time in pre-Muslim Indian musicological texts.
- Cyclicity can be related rather more directly to Sufi practice, which is not considered by any of the “cosmic symbolism” theorists cited above.
- The notion that Indian music is inherently more cyclical than any other form of music (e.g., Western art music) is itself debatable.

To some extent, these objections have been considered by the authors cited above, particularly Rowell and Simms. The former wrestles with precisely the problem that in discussions of tāla in ancient theoretical treatises, “the concept of cycle is conspicuously absent from [the] set of topics [discussed]”, noting in comparison with modern Karnatak theory that “cycle” has become “an implicit assumption of the system” (Rowell 1992, 192). His attempt to square the circle, so to speak, relies on a theory of “mutual feedback and a development of... ‘resonances’ between a musical tradition and its controlling

ideology” (Rowell 1988, 330), which introduces a time-lag – of perhaps many centuries – into the homology of musical and cosmological time concepts.

Another possible objection raised, and answered, by Simms, is summed up in the question, “To what degree does such correspondence constitute a symbol, and for whom is it a symbol, if this is so?” (Simms 1992–3, 80). His answer is, first of all, that the correspondences are real, whether or not they are perceived. Second, such symbols appeal to the intellect, and thus popular consensus is irrelevant: “From the traditional perspective . . . esotericism . . . is by definition relegated to a small minority within a community” (*ibid.*); in other words, it is not surprising that such knowledge is the preserve of an elite, or that musicians themselves may not be aware of it. In fact, although the notion that Indian music manifests a “cyclic” conception of time and that this is an example of difference from Western music is commonplace. When interviewed about the meaning of performance and musical time, musicians very rarely invoke the notion of cyclicity or circularity, let alone its symbolic importance.

As for my final bullet point, note that none of the authors cited above convincingly argues that in representing aspects of Hindu cosmology, Indian music manifests a basic difference from Western. Such and Jairazbhoy make the claim, briefly, with respect to *tāla*, but do not offer a convincing argument with which to back up their claim; in fact, whenever Indian music is described in detail as manifesting cyclical structure, invariably an equivalent claim could be made for Western music. The notion of difference is more implicit in Simms’s and Rowell’s accounts; nonetheless, the motivation for all of these speculations seems to be a perceived need to explain Indian difference, and they are undermined by a failure to demonstrate wherein that difference lies.

Indonesian, African, and cross-cultural studies

At this point it is instructive to bring in reflections on other parts of the world, explaining how and why musical time might represent deep cultural ideas. I briefly mention two case studies: Indonesian gamelan, which has been subjected to comparable readings to the Indian case, and so-called “African rhythm,” which has been the focus of long debate and to high-profile critique of the assumption of essential difference. In between, I reflect on Alan Lomax’s attempts to consider the issue cross-culturally.

The symbolism argument, in the case of gamelan, hangs less explicitly on cosmology and more on time concepts manifested in calendrical systems. For our purposes, the similarities between the two approaches are more important than the differences – although why Indian music attracts speculation on philosophical constructs and Indonesian on calendrical systems is itself an interesting question. Influenced by Judith Becker (1981), Hoffman

has argued that the way we structure knowledge in music is not different from the way in which we structure knowledge in other domains (Hoffman 1978). Time in Java is essentially cyclical, the argument goes, as manifested in calendrical systems: Javanese calendars have concurrent five-, six-, and seven-day weeks, the whole pattern repeating every 210 days. The most important function of gong-ensemble music (a more generic term encompassing gamelan) is to accompany ritual, and therefore it is to be expected that the music too manifests cyclical structure: "The most important function of gong ensemble music is to accompany rites and ceremonies . . . At these times of transition – births, marriages, exorcisms, coronations – the order of the universe is in danger of being upset. The cyclic notion of time . . . is a part of that order, if not central to it. The symbolic statement of the nature of cosmic order through music and ritual is at once its definition, confirmation, and transmission" (*ibid.*, 78). This broad approach has retained some currency, although it is not always accepted without ambivalence. In Michal Tenzer's more recent study of Balinese music, for instance, the author's treatment of this issue takes into account more recent critical perspectives, and he summarizes equivocally that "what we . . . gain by considering these issues is . . . a poetic metaphor for how music embodies ingrained attitudes and beliefs" (Tenzer 2000, 75).

Although the specifics of this case differ from those of Indian music, some of the same objections can be made to this argument. First, of course, it has not been demonstrated that Javanese music is inherently more cyclical than Western music; one might argue that it is equally true that Western music manifests the cyclical epistemology evident in the Gregorian calendar. If so, why does the observation appear to carry more explanatory weight in Indonesia than it does in Europe? Second, if the common epistemology is so important, why does Javanese music not use simultaneous time cycles of five, six, and seven beats? Of course, it would be extremely difficult to play such music, and, moreover, its significance would not be clear unless it were to be explained verbally – but it is easy to forget that musical practice has its own constraints and is not able freely to symbolize external ideas.

Perhaps the most detailed and comprehensive attempt to map rhythmic style onto culture cross-culturally has been that of Alan Lomax, as part of his cantometrics project. This ambitious project, which involved a search for statistical correlations between aspects of musical style and ethnological findings, is well known and critiqued within ethnomusicology. In all the (often justified) criticism of cantometrics, however, the value of Lomax's intuitions and of his more supportable findings have unfortunately been ignored, and this is the case in his approach to musical time. Lomax, crucially,

starts from the premise that rhythm plays a vital role in social relations and communication; in other words, he is more interested in what people achieve through musical rhythm than in what it might symbolize. Thus,

Rhythmic patterns facilitate the co-activity of groups and aid their members in coordinating energies and resources in work, nurturance, defense, social discourse, rites of passage, interchange of information, and, above all, expressive acts. The important role of rhythm in group behavior suggests that we can view the rhythmic aspects of communication as essentially social in nature – a system that binds individuals together into effective groups and links groups into communities and polities. Each such “rhythmic style”, passed on generationally, shapes many aspects of each cultural tradition. (Lomax 1982, 149–50)

While Lomax is too quick to essentialize the rhythmic styles of particular cultures – and here his results can sometimes be less than convincing – two main points can be drawn out which do bear further consideration: 1) that it may be possible to see in musical time the traces of social interaction; and 2) that rhythmic styles have histories. I argue below that these observations may help to lead us away from the search for “symbolism” and toward a more productive reading of musical time in its relation to history. Lomax, like most of the authors considered above, believed that a form of cultural symbolism argument remains valid (*ibid.*, 158): his detailed findings support the contention that rhythmic styles can index their cultural environments, but not that they reflect them iconically.

As for the extensive ethnomusicological literature on African rhythm, attempts to link musical time to different knowledge structures have not been so prominent. Ruth Stone has tried to link African rhythmic practice to a notion of an “African sense of time.” Although she does not offer a token of difference as easily recognizable as “cyclicity,” she nonetheless concludes that: “Here [in African music] we have a view of time that on certain levels is an alternative to linear progression calculated quantitatively” (Stone 1986, 124) – in other words, to what she and others take to be the standard Western view. Significantly, no doubt, the differences invoked otherwise have been more often to do with that between knowledge and practice: African rhythm is construed as different because it is fundamentally connected to movement, dance, and the ergonomics of the human body.

Kofi Agawu’s extensive treatment of the topic develops from a description of an archetypal day in Northern Ewe culture, which juxtaposes the rhythms of music with those of everyday life (Agawu 1995). He does not claim any simple causal connection or symbolic relation between the domains, however, and he emphatically denies the notion of essential difference. Agawu has subsequently expanded his attack on the concept of African

rhythm (Agawu 2003): he accuses ethnomusicologists of being too quick to assume essential difference, and, as a consequence, of fundamentally misunderstanding musical time in Africa. My reading of the literature on Indian and Indonesian music bears out his core argument that ethnomusicologists have been premature in assuming difference, and have as a consequence reproduced misleading views on different regimes of musical time. Why this might be so, and how we might move to a more productive investigation of the relation between musical time, culture, and history, is the subject of the next section.

Temporal symbolism in context: history, anthropology, psychology

Time, history, and anthropology

Historian E. P. Thompson set a benchmark for studies of the politics of time with a 1967 article in which he traced shifts in time concepts associated with the industrial revolution, which he explains in terms of technological developments (for instance, the use of the pendulum in household clocks from 1658), as well as what he calls the “marriage of convenience” between Puritanism and industrial capitalism (Thompson 1967, 95). He might have added another factor, at least from the later nineteenth century, namely evolutionism, thanks to which the notion of historical “progress” became more prominent. It is significant, although Thompson does not remark on the fact, that one of the main drivers for the development of clock technology was the need for accurate maritime navigation (Sobel 1995): the connections between industrialization, modernity, and colonialism are many-layered and partly mediated by time concepts. Before large-scale industrial capitalism, Thompson argues, work was timed according to “task orientation,” in Britain as in other societies. In other words, jobs were done when they were needed; it was large-scale industry and the need to synchronize labor more precisely that led to a greater emphasis in Europe on “clock time.”

There are a couple of other interesting points to note in Thompson’s account. First, he mentions (but develops only briefly) the idea that the time concepts associated with Western industrial capitalism have also been imposed on the so-called developing world, thus: “what was said by the mercantilist moralists as to the failures of the eighteenth-century English poor to respond to incentives and disciplines is often repeated, by observers and by theorists of economic growth, of the people of developing countries today” (Thompson 1967, 91). Second, he makes the case that this shift was an antagonistic one, in which religious moralists and capitalists attempted, in the face of considerable

resistance from the peasant and industrial working classes, to impose a new time discipline.

Notions of time concepts as political and intimately related to power relations have been significantly developed since Thompson's time by postcolonial historians, who have linked the joint development of European modernity and colonialism to the "historical mode of thought" and hence to a particular conception of time. The so-called "linear-progressive" model of time may not have been the only one available within Europe, but it is the conception that helped to drive the industrial revolution, colonial expansion, and the emerging concept of modernity itself. Prathama Banerjee coins the term "colonial modernity" as a means of arguing that, in fact, there is no other kind:

[T]he figure of the "primitive", constructed through colonial encounters, was foundational to Europe's imagination not only of the world but also of itself, and to its own self-critiques. In this sense, there seems to be no modernity, European or otherwise, which is also not colonial modernity ... [I]t was the invention of the "primitive" through colonial encounters which led to the defining trait of modernity, namely, the imperative to produce time as a linear, chronological extension, the ground for historicity as it were, in which nations could be serialized in progression, such that the nonmodern no longer appeared as present and contemporary to modern historical subject. (Banerjee 2006, 13)

Colonialism was sustained by the historical mode of thought and by the idea that this was a mark of progress that modern humans possessed and "primitives" still lacked: Banerjee attributes to Hegel, the key philosopher of European modernity, the assertion that "the primitive condition was a state where time was (mis)apprehended as an uninterrupted present, where the subject-object distinction had not yet emerged and therefore, where the mind was incapable of abstraction" (*ibid.*, 5).

This distinction between the modern and the primitive is linked further to the opposition of knowledge and practice: the primitive is relegated to a mode of pure practice, with practice itself "reinvented as the 'primitive' other of thought" (*ibid.*, 3). The link to representations to African rhythm as essentially bodily action – distinguished from Western musical forms conceived as structured by the intellect – is clear enough. These ideas played out in complex ways in India. Although India's intellectual achievements were acknowledged in Europe by the time of Hegel, for instance, he nonetheless denied them "history" since India had not achieved statehood (Guha 2002, 9ff). Rather than indexing a split between knowledge and practice, the distinctions claimed in ethnomusicological literature on India suggest the mapping of different forms of knowledge. The cosmic symbolism argument thus acknowledges the intellectual component of Indian music while also insisting on difference between

cyclical and linear-progressive notions of time. Another effect of this writing, intended or not, is the partial denial of history to Indian music: if the key concepts are essentially unchanging, historical change is a superficial matter. Where musical time is linked to notions of essential difference, especially where this difference invokes the West as linear, progressive, and teleological and the other as circular, static, and unchanging, we need to be alert to the political implications of such arguments (Chakrabarty 2008).

Anthropology must be considered in its own right here, not least because of the accusation that ethnographic texts fed into Europe's own imagination of itself as the privileged site of modernity. The notion that different societies possess fundamentally different modes of temporal thought can indeed be traced in anthropological texts. Alfred Gell, in his critical discussion of the topic, lays the responsibility for what he sees as a fundamental misapprehension at the door of Emile Durkheim, who insisted that time, like other basic categories, was socially constructed. For Gell there can be only one metaphysics of time, although there are undoubtedly multiple contingent beliefs about time in operation in different societies, or in different contexts within the same society.

There is no fairyland where people experience time in a way that is markedly unlike the way in which we do ourselves, where there is no past, present and future, where time stands still, or chases its own tail, or swings back and forth like a pendulum. All these possibilities have been seriously touted in the literature on the anthropology of time . . . but they are all travesties, engendered in the process of scholarly reflection. (Gell 1992, 315)

The idea that anthropology as a whole proposes a clear distinction between modern, Western, linear-progressive time and primitive, present-oriented, cyclical time is a great over-simplification, as Gell's critique makes it clear. Difference in time concepts, nonetheless, has been a recurrent theme – evident in writers as various as Evans-Pritchard, Lévi-Strauss, Bourdieu, and Geertz – from which ethnomusicology has drawn inspiration; for example, Geertz's presentation of Balinese time concepts has influenced discussions of the time structure of gamelan music (Geertz 1973). Arguments on difference and cultural symbolism in relation to musical time draw, then, on anthropological ideas that are now fiercely contested, and which carry some of the same ideological baggage as has been identified in historical scholarship.

Musical time and psychology

It is easily forgotten – and the discussion thus far demonstrates that it has too often been forgotten – that structures of knowledge (discourses, ideologies,

epistemologies) are not free to constrain musical time as they will. I turn now to a discussion of this theme by referring back to Banerjee's postcolonial history, and in particular her take on practice: "I understand practice, as that mode, beyond the theoretical and the representational, in which we must engage with time . . . What theory always explains as the failure of practice is what practice must be, as that which effects something other than what was foreseen" (Banerjee 2006, 33, 35; my emphasis). I argue here that one can understand practice as a mode in which we must engage with fundamental constraints on temporal perception and production; and I wish briefly to sketch some of the ways in which those constraints can give rise to effects other than those foreseen by knowledge structures. Practice, in other words, is not the domain of the primitive, of those cultures lacking overt music theory, it is a part of the complex reality of all musical cultures. The terms I should like to discuss here concern the psycho-physiological constraints within which music is practiced and experienced.

Psychological research has identified and confirmed both natural limits and preferences in the domain of human time perception. To cite briefly a couple of musically relevant examples, the minimum interval required to perceive one sound event as following another is *c.* 50 milliseconds (if the interval is shorter than this, the order of the events is impossible to determine); the shortest intervals defining a "beat" or pulse in music are, in practice, around 100 milliseconds. At the other end of the scale, the longest duration possible between elements if they are to be heard as part of a coherent sequence is *c.* 1.5–2 seconds (Handel 1989, 385). The "psychological present," within which multiple perceptions are integrated into a perceptual "now," typically extends up to two or three seconds. In the middle of that range, individuals asked to tap a regular beat will normally do so with a time interval between taps of 200–900 milliseconds, with the range 600–700 milliseconds particularly salient (*ibid.*). Human action also has its temporal constraints: How quickly can a sequence of sound-producing movements be produced? How long can a sung note be held or a plucked string persuaded to vibrate? Actual figures would depend on the instrument or the particular kind of singing or playing concerned, but no one would doubt that natural limits exist.

Human perception and action fall within definite temporal constraints, then, which can be transcended only through the use of medium- and long-term memory and by the use of imagination and metaphor. Biology does not present only constraints, however; it also offers a predisposition to interaction, and to the making of order and meaning. One of the most important things people do through music is interact, that is, they coordinate actions and perceptions (limb with limb, hand with eye, individual with individual).

Tendencies to periodicity in both repeated motor behavior and attention, together with an innate predisposition to entrain (in particular, to entrain attention to regularities in the environment), make synchronization between and within individuals a feature of musical events (Clayton *et al.* 2005).

It is clear that all music making and listening has to work within certain biological constraints: musical time scales are far from being unconstrained. While a musical performance can be extended indefinitely, it is made up of actions and perceptions taking place in the range of roughly one hundred milliseconds to three seconds; this range is further differentiated, with particular time scales relevant for the perception of pulse and meter. Taken as a whole, psychological and physiological factors provide a range of constraints and affordances with which any music making or listening must engage: musical behavior operates only within specific timescales. Drawing on Banerjee's formulation of the knowledge–practice dichotomy, musical practice is a domain in which we are forced to engage with natural temporal constraints. Knowledge structures may be more susceptible to influence from other domains, such as the application of metaphors of cosmological processes, but where these manipulations run contrary to innate predispositions that lie beyond the limits of discourse, tensions will inevitably arise. However musical time is theorized, in brief, knowledge structures can only partially be converted into practice.

Conclusions

Reading the time of Indian music

In this section I offer an interpretation of a typical rāga performance that contrasts with the “cosmic time” interpretations. This reading comes out of the psychological perspectives and the notion of practice discussed above; in other words, it assumes that Indian music practice develops from socio-biological tendencies, but is developed in culturally specific ways. The latter, however, have relatively little to do with the notion of cyclicality, and much more to do with social hierarchies, interactions, and power relations; thus, musical meter – and the temporal order in general – emerges as a form of regimentation. A form of order is seen to emerge spontaneously, but the explicit control and manipulation of that order is interpreted here as a process of bringing people together in a common temporal order – a process which can be glossed either as one of communion (which affords a positive “fellow-feeling”) or as one which breeds antagonism (as commonly observed in tensions between soloists and accompanists in Indian music).

The most profound aesthetic experience of *rāga* is supposed to be afforded by *alap*, a special duration unconstrained by metrical order (though, of course, still subject to limits on the temporal scales of action and perception, and to constraints on the extent of a singer's breath or a string's vibration, and still subject to interpretation in terms of order and development). The time of *alap* is one which tends to deny synchronization between individuals: *tanpura* (long-necked used for drone pitches) players perform periodic patterns that should not be attended to as such but as a kind of arrhythmic background; drummers should remain silent but attentive (playing the part of the ideal listener); while a soloist should deploy his or her actions in order to give an impression or irregularity and deny the entrainment of attentional rhythms. The aim, at this stage, is to attract and sustain the listener's attention on aperiodic phenomena (at least within the time scales defined here, 100 milliseconds–3 seconds) – intonation, fine pitch inflections, subtle dynamic and timbral manipulations, and so on.

As *rāga* moves into *jor* and a steady pulse is introduced, this pulse begins to organize both action and perception. In the transition to *jor* an organizing pulse is imposed – or is this an intrinsic pulse, which has hitherto been suppressed, now being allowed to emerge? Now the listeners and co-musicians can refocus their attention, as pulse affords entrainment, and thus both predictive listening and coordinated performance. From the simple pulse, moreover, more complex forms of order emerge spontaneously, and where these can be perceived they can be consciously ordered. My own study of entrainment in *jor* demonstrates how a singer and her harmonium accompanist are able to sustain a loose coordination, and how the musicians' tendencies to entrain result in intermittent (and inaudible) entrainment between *tanpura* players organized with reference to this pulse (Clayton 2007a). I also show how this entrainment can encompass a number of different polyrhythmic relationships, so that the musicians' mutual attention results in the emergence of unstable, imperceptible, but nonetheless complex forms of temporal organization (which I have termed *proto-meter*).

As *tāla* – and drum accompaniment – are introduced, a hierarchical organization of time becomes explicit, conscious, and perceptible. This organization is directed by the soloist, who has the authority to select *tāla* and tempo, although these are chosen from within a narrow range of options dictated by past practice and understood by all the musicians and many listeners. Time is now regimented, with the drummer following the accompanist's lead in maintaining temporal order, and other accompanists and listeners falling in with the same temporal pattern. This dynamic – the drummer, musically subservient, acting as the enforcer of temporal order on behalf of a soloist

who is expected to remain above the fray – is a crucial one in Indian rāga performance. While as listeners we may welcome this imposition of order on our experience – it is an agreeable price to pay for the aesthetic enjoyment presented for our appreciation – it can also be a source of considerable tension between musicians.

The next, crucial stage of this process of regimentation comes with the imposition of a definite metrical framework or tāla. Tāla affords both a spontaneous entrainment and a conscious knowledge of complex temporal patterning: it structures experience in a predictable, sharable form (Clayton 2007b). This organization of time affords a kind of communal experience – listeners can move from internally tracking an irregular sequence of events to demonstrably tracking a definite periodic sequence, complete with hand gestures, foot taps, and vocal interjections, so that listeners attend to each other almost as much as they track the soloist's performance, one which can be intensely satisfying for an appreciative audience member. This is a hierarchical, structured mode of mutual engagement in which the drummer keeps order on behalf of all and under instruction from the soloist. It also becomes a site for tension and contestation, albeit usually covert, particularly between soloist and accompanists, who are required to submit to the order imposed by a soloist.

This development from *alap* to tāla-bound composition may afford, as we have seen, interpretation as a cosmic icon, but my description above highlights a different interpretation. An Indian rāga performance can be read as a transition from a personal and highly individuated mode of experience, through the spontaneous emergence of regularity as a result of interaction, and on to the imposition by a dominant individual of a particular temporal regime, an act that confirms him at the head of a hierarchical ordering of the individuals present. Subsequent intensification explores the ramifications of this order and demands continued submission, before the tensions in the temporal hierarchy make it unsustainable and it collapses once more into separation and individuation.

In some details this reading is supported by empirical evidence: entrainment can be observed and measured, audience involvement likewise, and tensions between soloists and accompanists can be brought to light easily enough ethnographically. Of course, even if parts of a performance involve the imposition of temporal order, the maintenance of hierarchies and their covert contestation, there is no reason to insist that entire performances must be read as political allegories (and there is no evidence that participants do so). On the contrary, whole performances only act consistently as large-scale allegories where there is a conscious intention to do so, and there is no evidence of any such intention on the part of Indian musicians. I do argue,

nonetheless, that like any kind of music making, such a performance is the result of human interactions; individuals are more or less entrained; this entrainment is more or less symmetrical; and patterns of interaction are maintained on a continuum from the egalitarian to the hierarchical. Therefore, like any kind of musical performance, the presentation of a rāga can be read in terms of interaction, coordination, regimentation, and hierarchy, and therefore in political terms. There is no need to invoke a culturally unique cyclicality to explain Indian musical time. Where one does, as I have argued above, the effect is to introduce an ideologically charged layer of paramusical discourse that has little relevance to practice.

The time of music and the time of history

A key difference between musical time and historical time is the way in which each can be experienced by a human subject. The time scales at which musical actions take place are highly constrained: time may be infinitely scalable, but our perceptual mechanisms are not. Historical time, in contrast, is always reconstructed and imagined – whether based largely on documentary evidence, on philosophical argument or on speculation. What the two have in common is that both involve both change and recurrence, and thus afford both linear and circular descriptive metaphors. Being dependent on metaphor and reconstruction, however, history is a form of knowledge, and far less constrained than music by the imperatives of practice.

If the time of modernity is driven by mechanization, regimentation, and socially coordinated time patterns, how does the time of Indian music interact with this? Listeners' reports on their experience of Indian rāga performance speak of "naturalness" and, implicitly, of using the music as a retreat from mechanized, noisy reality to an idealized, ahistorical "nature." The reading above suggests a transition from the individualized to the interactive, with tensions developing around the power of a dominant individual to regiment the group. "Cosmic time" readings suggest, in contrast, a retreat from the social to a focus on iconic signification, in a domain freed from linear development – a more complete rejection of the modern world.

In an era in which metropolitan India is experiencing unprecedented economic growth, rāga performance is a site which allows listeners a brief time-out from a routine regimented for maximizing production and profit. I do not, however, take this as evidence for a cosmic time reading. Performances of Indian rāga music can be intensely contemplative, but they are also richly social occasions – they emphatically do not entail an escape from social hierarchies. They offer not a complete escape from modernity, or the contemplation of pure symbolism; rather, an intensely practical, socially interactive site within

which moments of individual escape can be embedded. In this respect, in fact, their role may be remarkably similar to that of many kinds of music making in the West.

One of the questions I posed at the beginning of this chapter was: could particular musics lie outside the history of world music? If we assume that music reflects profoundly different epistemologies in different societies, then perhaps so: Indian music, for example, might have survived the ravages of colonialism with its features basically untouched, and thus offer an escape from postcolonial modernity. I argue, nonetheless, that this is an illusion, that far from evading history, change and encounter have left their mark on present-day Indian music. To illustrate this I will cite one piece of ethnographic evidence. I noted above that musicians rarely draw attention to cyclicality as a token of difference. The following quotation from Abhijeet Banerjee, a Kolkata tabla player, is an exception. What it illustrates is that far from indicating separation from the flow of world history, Indian musical time is a space of encounter, of tensions, and of resolutions; and finally that embodiment and social interaction are at least as important from an Indian master musician's perspective.

In our tradition, there is no metronome concept . . . Rather people say here in this country, or in our tradition, that a human being reacts to the other human being, so the beat goes little bit up and down. If it is very straight, it is like a machine. So, in Indian film music or recording music, it gets very hard for a classical musician to go with the clicks. It's very hard. But what my Guruji did, is [train me a] little bit with metronome. And our (pause) it's not a linear, it's a circular thing. So that is more important for us. So this is the basic difference. For us to get the one, (starts counting tāla with hands while talking) now I can talk and I can feel wherever it is. I always feel, you know, when the one is coming. It should flow in your blood, in your mind, everywhere. (Banerjee 2007)

To conclude this chapter I will organize my observations on the relationship between musical and historical time under two broad headings, arguing (a) that musical time carries traces of histories of social interaction, and that (b) musical time can partially reflect ideas current in other domains through the imposition of knowledge structures on practice.

First of all, as Lomax suggests, musical time can be regarded as the trace of social interaction. In this sense, musical time always affords an indexical interpretation because it points toward the interactions associated with it (whether in a ritual, entertainment, or other contexts). Musical rhythms are in this sense dependent on social variables; however, it should be borne in mind that the opposite may also be true, that is, social interactions that are not afforded by available musical genres may not take place. In this sense, music

does not simply reflect social relations, but also constructs them. These indices can be remarkably robust, for instance in the case of dance rhythms that survive the transformation of dance music into “listening” music (an Indian example can be found in the *thumri* genre). They should not be confused, however, with the iconic symbolism indicated in homology theories. Musical indices do not require verbal mediation or conscious recognition, whereas iconic representation of the kind described above is a form of knowledge, and requires discursive framing. Musical time, then, can index social interaction and can survive over historical time as the trace of previous patterns of interaction.

Second, there is another important way in which musical time is linked to its sociocultural context, and that is through structures of knowledge, as opposed to practice. These knowledge structures include formal music theory as it exists in the West or in India, as well as more informal beliefs regarding “what we know” about music. Such forms of knowledge necessarily operate by means of metaphor, which has the property, among others, of making musical time commensurable with historical timescales (including both the calendrical and the cosmological). The kinds of metaphorical mappings that are made tend to be of similar types to those made in other cultural domains; in this sense, Hoffman is right to talk of shared epistemologies. However, knowledge structures can neither completely describe nor completely control practice: because musical time is also constrained by human cognitive faculties, whose affordances can make theoretically desirable temporal relationships highly unstable, and instead favor temporal relationships with no particular salience in the knowledge domain.

We can see, therefore, that relationships exist between musical and historical time on a number of levels. Musical time indexes social relations, and the fact that musical forms are repeated when their indexical referent no longer pertains (e.g., obsolete dance rhythms) means that some forms of music may be read as palimpsests, layered histories of social interaction. Musical forms also embody histories of this dialectical engagement between knowledge and practice, and may in some circumstances be read as such – the ideas people hold about music can help to shape musical practice, within certain constraints.

Neither of these two interrelated phenomena mean, however, that musical forms should be read uncritically as symbols or representations of cosmological beliefs or other cultural forms; nor should the differences between rhythmic practices be read simplistically as indices of profoundly different epistemologies. The evidence adduced in such arguments is in fact extremely weak, while they can be critiqued in exactly the same way as they have been in anthropology and in historiography. Wittingly or otherwise, this approach helps to reinforce an unsupported view of essential difference between cultures. In earlier times

the most basic difference would have been construed as that between “modern” and “primitive,” the former exemplifying a linear-progressive metaphysics of time, the latter an ahistorical, present-oriented cyclical view, a construction whose political implications have rightly been critiqued by postcolonial theorists. Whether or not the more recent incarnations of this approach in ethnomusicology can be said to be so politically potent is a matter for debate, but I argue here that a deeper understanding of musical practice requires a serious attempt to understand the relationship between the time of music and the time of history in all its complexity.

Bibliography

- Agawu, V. K. (1995) *African Rhythm: A Northern Ewe Perspective*, Cambridge University Press
- (2003) *Representing African Music: Postcolonial Notes, Queries, Positions*, New York: Routledge
- Banerjee, A. (2007) Interview with Martin Clayton, February 8
- Banerjee, P. (2006) *Politics of Time: ‘Primitives’ and History-writing in a Colonial Society*, New Delhi and Oxford: Oxford University Press
- Becker, J. (1981) ‘Hindu-Buddhist time in Javanese gamelan music,’ in J. T. Fraser, N. Lawrence, and D. Park (eds.), *The Study of Time IV: Papers from the Fourth Conference of the International Society for the Study of Time, Alpbach-Austria*, Berlin and New York: Springer
- Chakrabarty, D. (2008) *Provincializing Europe: Postcolonial Thought and Colonial Difference*, Princeton University Press
- Chaudhary, S. (1997) *Time Measure and Compositional Types in Indian Music: A Historical and Analytical Study of Tala, Chanda and Nibaddha Musical Forms*, trans. by H. Ramanathan, New Delhi: Aditya Prakashan
- Clayton, M. R. L. (2000) *Time in Indian Music: Rhythm, Metre and Form in North Indian Rag Performance*, Oxford University Press
- (2007a) ‘Observing entrainment in music performance: Video-based observational analysis of Indian musicians’ tanpura playing and beat marking’, *Musicae Scientiae*, 11, 1: 27–60
- (2007b) ‘Time, gesture and attention in a khyal performance’, *Asian Music*, 38, 2: 71–96
- Clayton, M. R. L., R. Sager, and U. Will (2005) ‘In time with the music: The concept of entrainment and its significance for ethnomusicology’, *European Meetings in Ethnomusicology*, 11 (ESEM Counterpoint 1): 3–75
- Deva, B. C. (1974) *Indian Music*, New Delhi: Indian Council for Cultural Relations
- Geertz, C. (1973) *The Interpretation of Culture*, New York: Basic Books
- Gell, A. (1992) *The Anthropology of Time: Cultural Constructions of Temporal Maps and Images*, Oxford: Berg
- Guha, R. (2002) *History at the Limit of World-History*, New York: Columbia University Press
- Handel, S. (1989) *Listening: An Introduction to the Perception of Auditory Events*, Cambridge, MA: MIT Press

- Hoffman, S. B. (1978) 'Epistemology and music: A Javanese example', *Ethnomusicology*, 22, 1: 69-88
- Lomax, A. (1982) 'The cross-cultural variation of rhythmic style', in M. Davis (ed.), *Interaction Rhythms: Periodicity in Communicative Behavior*, New York: Human Sciences Press, pp. 149-74
- Rowell, L. E. (1981) 'The creation of audible time', in J. T. Fraser, N. Lawrence, and D. Park (eds.), *The Study of Time IV: Papers from the Fourth Conference of the International Society for the Study of Time, Alpbach-Austria*, Berlin and New York: Springer
- (1988) 'The idea of music in India and the ancient West', in V. Rantala, L. E. Rowell, and E. Tarasti (eds.), *Essays on the Philosophy of Music*, Acta Philosophica Fennica, vol. 43, Helsinki: Philosophical Society of Finland
- (1992) *Music and Musical Thought in Early India*, University of Chicago Press
- Simms, R. (1992-3) 'Aspects of cosmological symbolism in Hindusthani musical forms', *Asian Music*, 24, 1: 67-89
- Sobel, D. (1995) *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of his Time*, New York: Walker
- Stone, R. M. (1986) 'The shape of time in African music', in J. T. Fraser, N.M. Lawrence, and F. C. Haber (eds.), *Time, Science and Society in China and the West (Study of Time V)*, Amherst: University of Massachusetts Press, pp. 113-25
- Such, D., and N. A. Jairazbhoy (1982) 'Cyclical manifestations in Indian music', *Journal of Asian Culture*, 6: 104-17
- Tenzen, M. (2000) *Gamelan Gong Kebyar: The Art of Twentieth-century Balinese Music*, University of Chicago Press
- Thompson, E. P. (1967) 'Time, work-discipline, and industrial capitalism', *Past and Present: A Journal of Historical Studies*, 38: 56-97