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One Fusion Among Many: Merging Bali, India, and the West through Modernism
Une fusion parmi d'autres : réunir Bali, l'Inde et l'Occident à travers le modernisme

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Article abstract

The relationship between world music traditions and modernist art music in the European tradition is often explored in composers' musical fusions, but the motivations and aesthetics of such works often receive less notice than those grounded in post-modern (minimalist, popular music) approaches. In this essay the author asserts a particular relationship between rigorous modern composition technique and the highly rational patterning of Indonesian and Indian music, and follow this with analysis of Unstable Centre/Puser Belah (2003) a work composed for two simultaneous Balinese gamelan. The analysis demonstrates fusion at detailed levels of pattern and structure, but the article closes with a self-critical assessment of the venture.

One Fusion Among Many: Merging Bali, India, and the West through Modernism

Michael Tenzer

Solace in Pattern

Studying contemporary art music in the 1970s, the figure of the so-called "composer-theorist" loomed large. I'm thinking not only of Boulez, Stockhausen, Xenakis, but North Americans like James Tenney, Robert Morris, George Rochberg and Jonathan Kramer. The latter were academics riding the wave of the post-World War II expansion in composition programs, and developing their personal approaches in some sort of implicit relationship (either close or distant) to Milton Babbitt's serialism. Though I couldn't see it until later, what they taught was less important than what their behaviour modeled: that new music was a quest for mindful interaction between composition and analysis, based on a molecular musical awareness. No composer could work through feeling and intuition alone; one had to problematize a new language and construct it from scratch.

As the perception of serialism's hegemony ebbed I, like others, found inspiration in the practice of various world musics. My destinations were mainly Bali and (for awhile) South India. But teachers in these traditions had the same molecular awareness as the composer-theorists. The formalized offshoots of modern music, such as set theory, soon struck me as a patina overlaying practitioners' essentially spiritual commitment to sound in process, a commitment I now recognized as cross-, and inter-cultural. I don't know if a link between these two musician archetypes—the so-called gurus of traditional music and the theorists of modern Western music—has ever been made, but it should be. In this regard I recall how Robert Morris looked at me

significantly one day in 1977 after he heard that, at age 19, I was taking off for Bali, and said "…very cool."

My teachers in Asia lived in their worlds of patterns and structures and modes and tunings; they obsessed about them and found solace in them. That awareness—whether embodied in pitch class matrix, permutations of a mrdangam rhythm, or the grammar of Balinese melodic figuration—appeared to me as tantamount to authenticity in musical expression. This sudden reconfiguration of worldview generated creative energy and intellectual conviction. The kneejerk construction of core 'difference' between the Western and the non-Western now seemed a bill of goods. Indeed it blindly ratified shopworn and quaint oppositions between the West and the rest: rationality versus emotion, clarity versus sensuousness, progression versus stasis, and so on.

Not to minimize the surface contrasts, of course. I don't believe there is or was a way, when absorbing two different musics in the late 20th century or 21st century, for a bimusical individual *not* to experience schism between radically different identities symbolically embedded in the structures of the musics and reflected in their original meanings. Starting out, one brings one's own youthful music identity to the project and then has that comfortable identity, thrillingly smashed by the encounter with the other. After being in Ghana for a few months, Steve Reich famously compared the experience to a tidal wave (Reich, 1972 p. 48). But Reich then rejected mainstream postwar (serial, atonal) modernism to create a music based on his fantasies—a homogenous mixture of Africa, the middle ages, and jazz. To do this he drained off a lot of the music's information and focused on the repetitive, the gradual. He and others of like mind made minimalism the zeitgeist.

Reich was interested in the broad strokes and not the details of African music. His music reduced it to the ur-patterns he needed (with his minimal training, hearing more might have been difficult, but he chose to study only briefly). The deeper I knew gamelan through five years of living in Bali, the more I perceived a dense, anti-minimal avalanche of transformation layered onto the music's rigorous cyclic forms, and the more I saw its similarities to the rush of information inherent in postwar Western composition. I sought to stay faithful to that aesthetic both through and in terms of its compatibilities with Bali. I imagined Bali in dialogue with late Stravinsky, Messiaen, or Lutoslawski. It resonated with my experience but was also a way to reconcile the schism, to view the likenesses from above, to resist the clichés of other cultures as a-historic, static, and repetitive.

The search for fusion in music composition is like the search for the universal in the particular through research. It is the healing of the rupture one needs to heal, the spark across the arc of self-integration, the experience of fealty to (at least) two beloved traditions; the fusing of sameness and difference. Perhaps my way was no more faithful than Reich's, since there is no privileged approach. Every composer and every writer undergoes a self-constructed purification ritual. Every perspective is a betrayal of some other perspective.

Ethnomusicology and Composition

The wish to fuse arose from elsewhere too.

Ethnomusicologists typically struggle with methodology because of their desire to understand the music they study in a way that is faithful to the people to whom it belongs. Music is so important; what scholars write about it should be at least close to the truth as its creators see it. So how to obtain insider knowledge? Is it a matter of asking the right questions? Does one need to live closely with the practitioners? And then, once one *thinks* one understands, how can the conjectures be validated?

One way is that in some cultures, people will simply tell you if you are right or wrong, because they have a tradition of doing so among themselves. In others there is little or no verbalization and experiments must be invented to test hypotheses. A third way, prevalent in North American ethnomusicology for the last fifty years, is participation. Participation was mostly impossible in earlier periods due to social constraints under colonialism. But as this changed many American academic programs embraced performance of world musics. Learn to *do* like the other and thinking like the other would supposedly follow naturally.

In some cases this is absolutely true. But for a novice, performance proficiency may also comprise only passive knowledge, rote memorization, blind imitation, and muscle coordination through repetition. If one wants active rather than passive knowledge, mere doing may be a prerequisite but not necessarily the path itself. Try, however, to faithfully *compose* models of the music one is studying, and it becomes essential not only to articulate for oneself how the music is organized, but also its symbolic modalities and aesthetic parameters—the qualities that make it expressive for its makers.

All the above research validation techniques can be justified. They can be rigorous, and they can succeed. There is no ideological or disciplinary point to be made. Nonetheless, for me, ethnomusicology via composition became the *ne plus ultra*. Composing became the basis for validating the musicological

truths I was able to discover, though I was so young the first time that the chance to do it felt simply like an opportunity too amazing to pass up. Thus, while living in Bali in 1982, I composed the first of what would become a series of compositions for gamelan. I did this very self-consciously in a traditional idiom, at the invitation of my drumming *guru* Wayan Tembres. Not all of the music was really mine however. Some of it was contributed by Tembres, and some was baldly cribbed from other pieces popular that year. Musical resources were a pool of shared property, and part of the education.

The players were a group led by Tembres from the village of Lod Tunduh, in those days an unelectrified hamlet bisected by a dirt road. I am hard-pressed to convey the intensity, joy and satisfaction of the experience. The music was memorized by the full group of 25, convening three hours nightly for weeks of rehearsal in the open-walled village meeting hall. We practised amidst scraping crickets, frogs, barking dogs and clucking chickens, little kids scrambling, sweet coffee and clove cigarettes, banter and much laughter, as they learned the music bit by bit from Tembres and me until they could play it with a confidence and unity that no orchestral tradition could surpass. All for the collective spirit, as people earned their livings elsewhere.

There was also a sacred dimension because even though the music we gave them was not for ritual, the mere act of practising together strengthened their organization, which was otherwise obligated to fulfill temple and ritual functions. The piece had its premiere at a concert outside a temple in the nearby village of Sukawati on May 22 of that year, while a temple anniversary ceremony was underway inside. Though hundreds crammed into the performance area, there were high priests blessing villagers' offerings of fruits and cakes in the adjacent temple courtyard. The atmosphere was replete with other gamelan playing simultaneously within earshot, a bazaar of hawkers and gamblers on the periphery, the mingling smells of incense, flowers, a gas-powered generator, and frying oil; the crackling blare of a crude P.A. system, and thousands more milling about.

The experience deepened my future problematic: fusion wasn't only about merging sounds. Whole lives and philosophies had to be reconciled. Making this music with these people in these circumstances required a holism encompassing equally the details of note-to-note successions to the esthetic, etiquette and sensibility of Hindu-Balinese social interaction.

Ethnomusicology had dealt me a blow, just as it did to Reich. If at one time we thought composing was a venture of locating the "true" self so as to clamber up on the pedestal to Beethoven, world music had disabused us. True,

the most authentic trait still retained by Western composition is enactment of individual empowerment, which is the most promising future our species has. The world is clearly evolving in that direction. But ethnomusicology teaches collectivism, the most indispensable constraint on individualism. And in this regard the West eats its own tail: its music cannibalizes that of others, its ambassadors absorb others' cultural practices. Its wealth (in the form of research grants and commissions) enables the cultural interaction that threatens its very identity, an identity it is always hungry to transform.

Composing in Lod Tunduh gave me an unshakeable confidence that I understood what worked and what didn't in Balinese music. The understanding informed my ethnomusicology but transformed my compositional motivation by placing me in the eye of the individual/collective dialectic, where I felt impelled to respond. I became concerned with reconciliation of the two. But what would this be like? It took twenty years to streamline a response.

Unstable Centre: Background, Features, and Narrative

My response had to balance social, narrative and musical dimensions because nothing else would do. I managed their fullest fusion in *Unstable Center/Puser Belah*, performed in 2003 by 55 musicians (46 Balinese and 9 North Americans) playing on two Balinese gamelan sets. The fusion came together uniquely well in a 75-second passage just after the middle of the piece (it might be the only such exquisitely balanced moment I'll ever attain). The reflection supporting this technical and social fusion was inseparable from and inconceivable without a higher-level fusion of ethnomusicology and compositional perspectives. The devil is in the details, so it is worthwhile to unpack the experience of making this music and analyze this passage.[1] The score is shown in figure 1.

There are three music cultures involved: Balinese gamelan, South Indian classical (Carnatic), and the modernist stream of the 20th century West. Fusing their structures meant that certain salient techniques belonging to each were selected and merged according to a set of precompositional constraints specific and original to the genres. Balinese music controlled the domains of formal structure, orchestration and texture. South Indian music generated rhythm. The approach to pitch organization relied on Western models of pitch-class progression, ie., harmony. These three topics will be treated separately below.

The social formations comprised strict composition of a through-composed polyphonic music in a Western notated score, performers from mixed cultural backgrounds, teaching and memorization by rote on Balinese instruments, and adequate time allotted both for mastering the music and for social bonds

1. In 2001 I conceived a triptych of large-scale pieces to explore musical fusion in cross-cultural media. *Unstable Center/Puser Belah* was the first. The second *Underleaf/Buk Katah* (2006) mixed the gamelan with a nonet of winds, brass and piano. The third, *Resolution/Tabuh Gari* (2007-8) is for small orchestra with a pair of *kendang* (Balinese drums). The second part of each of these titles (after the slash) is in Balinese. *Puser Belah* means, roughly, 'split navel'—for the Balinese, the human navel is the centre of the body, analogous to the centre of the cosmos. To split it (a violent image) is to render the cosmos unstable. *Buk Katah* refers to a well-known line in Balinese poetry evoking the dust under the fallen leaves one sweeps out of one's courtyard each day. There is always more to sweep; the dust is a metaphor for the unending work of learning. *Tabuh Gari* is the name given to a group of traditional compositions that function as recessionals. They signify the ends of performances, time for the audience to leave. Here the name marks the conclusion of the triptych. For more on the triptych see Ellen Koskoff's liner notes to *Let Others Name You* (Tenzer, 2009) on which all of these pieces plus others are available. The 75-second passage discussed begins at 12:18 on the recording. It then repeats from 13:33 to 14:48, and is followed by an extension lasting to 15:05. I am concerned only with the initial statement.

to develop (both during and after rehearsals) between the Balinese and non-Balinese performers.

Unstable Centre obviously would have to be done in Bali, with a music learned in their way and properly using the resources of their instruments, composed in an idiom I had had time to develop over the years. But quite consciously, fusion was shaped as reciprocity as well as individual composer's bricolage. The default exchange basis of ethnomusicology research is that local knowledge is obtained through spiritually inferior compensation of some other nature: financial, usually. Basically a one-way street, the researcher pays to learn (in the name of "science"), and then takes that knowledge home to share, build a career, etc. Without claiming to be able to subvert that paradigm, I nonetheless aspired to design a laboratory in which to share Western music with Balinese in a way that made sense in terms of their traditional practices. A lived exchange of music for music, fusion was not only a function of what was produced or where, but how it was transmitted. A single musical medium (Balinese instruments) would be an educational site for Western and Indian music knowledge encoded in the practice of learning and playing. Perhaps this was mere "giving something back to the Balinese"—arguably a facile and self-congratulatory act. But I saw it as a subversive way to bring Western music to them on *their* terms, to have them see some of my own soul. I had known many of the participant musicians for fifteen years or more and I was older than they were—surely the time was ripe.

The Bali of 2003 was not that of 1982. By then, just down the road from Lod Tunduh in the village of Pengosekan, there was an independent musicians' cooperative, one of several that had emerged, called Çudamani (see Tenzer, 2005 and Vitale, 2002). The musicians in Lod Tunduh had been farmers; most of those in Çudamani were graduates of the Balinese arts academy (ISI), many of whom often performed, taught or studied abroad. They used a recently-invented kind of gamelan called *semaradana* with a seven-tone scale (rather than five) that had already stimulated much new composition. They were self-conscious stewards of innovation and had among them composers such as group directors Dewa Ketut Alit and Dewa Putu Berata, whose recent music was bold. Their cosmopolitan approaches led to idiom-enriching new techniques and nourished the possibility of Balinese music's international viability. Not least, Çudamani was a crack virtuoso ensemble with a nonpareil collective musical intelligence. It performed all over the world, but still accepted all ritual obligations, and still began each rehearsal with holy water libations delivered by the village priest. They had accepted my proposal to

devote a full month to learning the music. With university and government support, I could compensate them fairly.

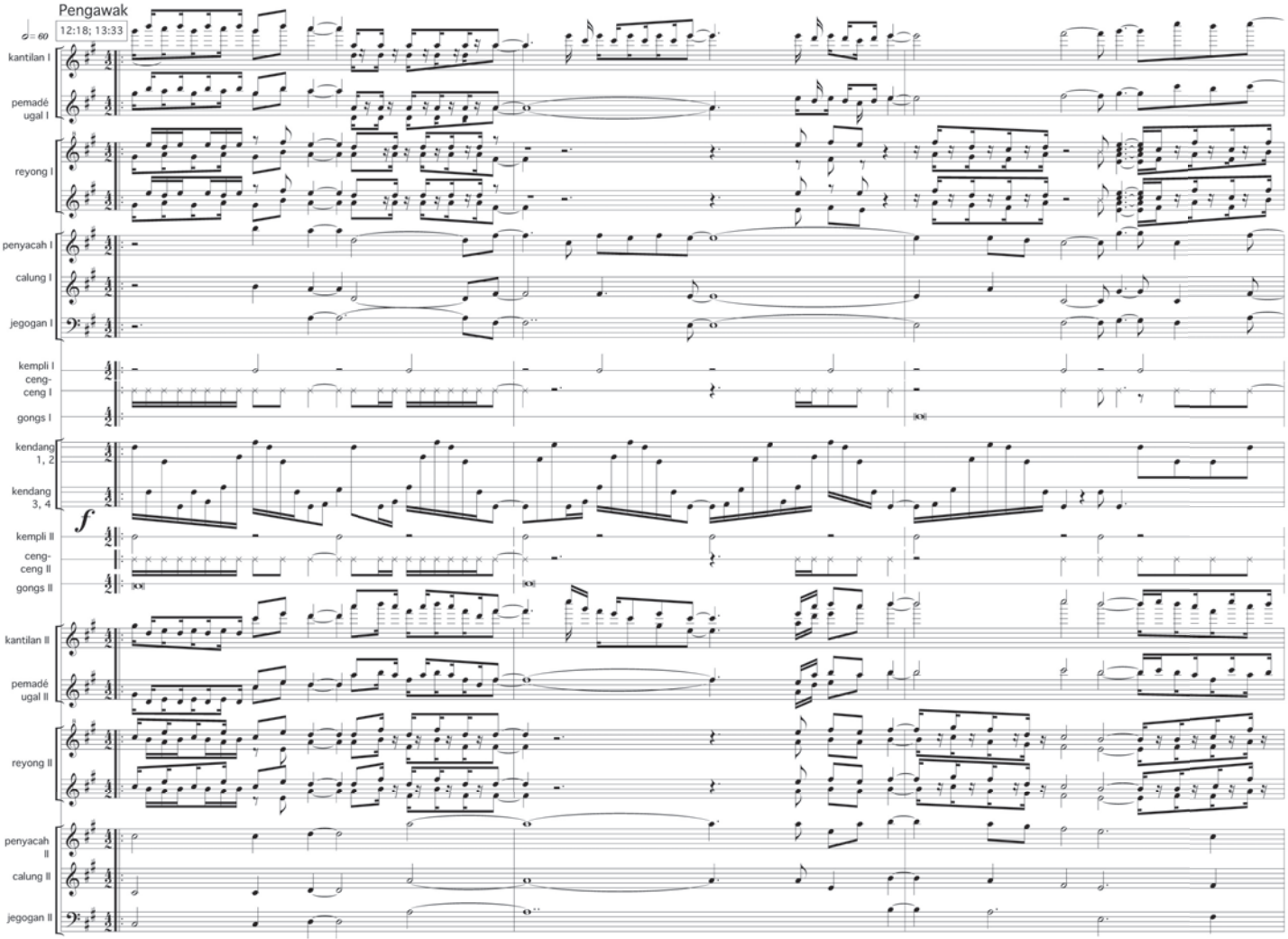
A second gamelan was borrowed from its owner and the two sets of instruments set up facing one another in Çudamani's rehearsal space, now cramped, as it had not been designed for two groups. Dewa Ketut Alit invited a younger but up-and-coming group from nearby to play the second set. Seven invited North American gamelan players took places in the ensemble alongside the Balinese; I sat behind the lead drum and began teaching, bit by bit. Twenty-five four-hour rehearsals later, the fifty-five of us had moved closer to one another in mind and music.

Balinese Instrumentation and the Narrative of *Lelambatan* Form

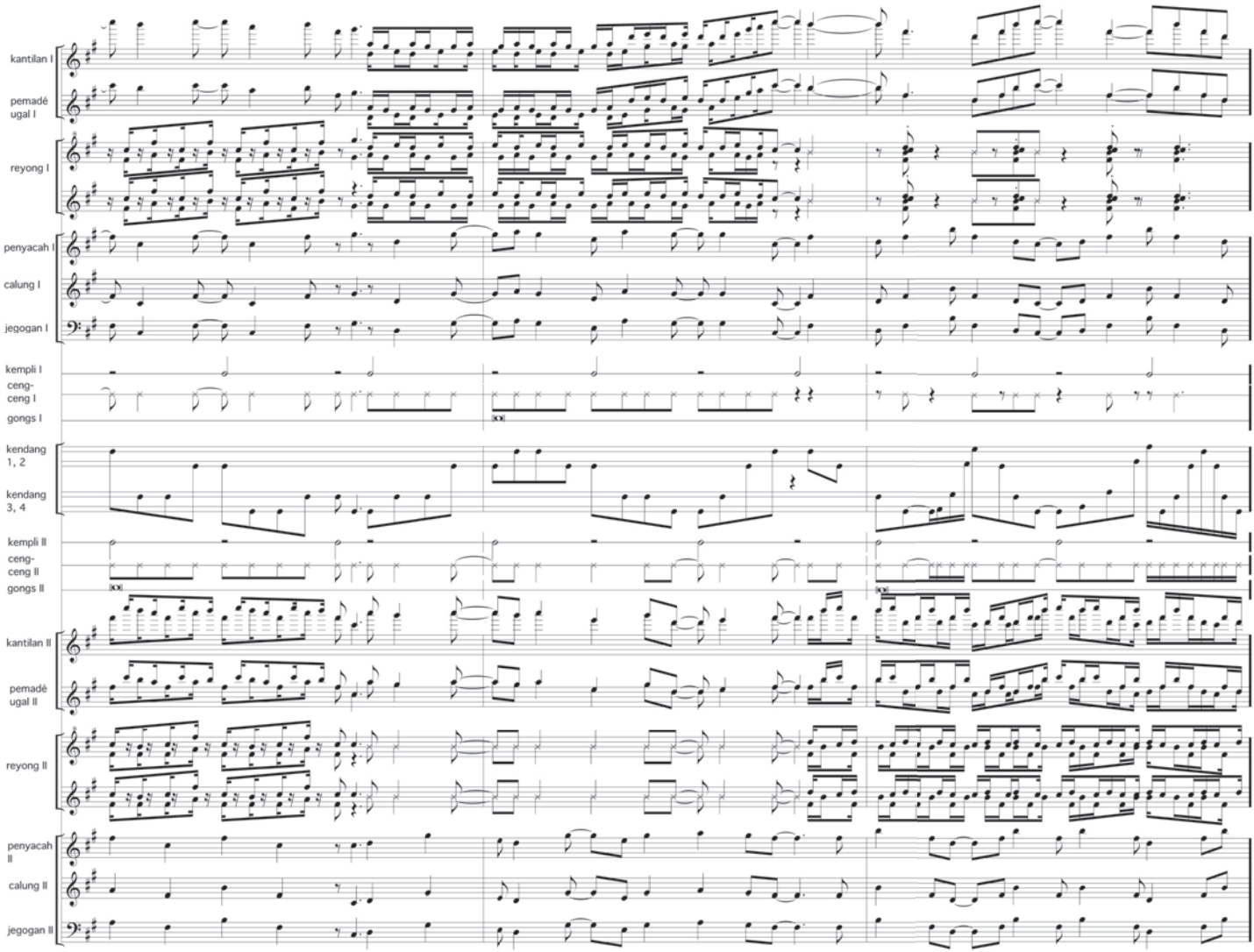
Gamelan *semaradana* instrumentation is the same as that of the 20th century 5-tone *gamelan gong kebyar* (see Tenzer, 2000) but with additional keys and gongs added to fill out the full seven-tone *pélog* scale from which *kebyar's* scale-subset drew. In figure 1's score the instruments of gamelan 1 and gamelan 2 that are tuned to the *pélog* scale are shown at the top and bottom respectively. In the middle are each gamelan's various gongs (the large *gong*, medium *kempur*, small *klentong*, and the time-beater *kempli)* the small cymbals *ceng-ceng*, and the lap-held, two-skinned drums *(kendang)*.[2] The gamut C#-D-E-F#-G#-A-B roughly but conveniently represents the scale, though the actual sound is richer due to the complex spectra created by mallets striking bronze, and the acoustical beating of aesthetically distorted octaves and other unequal intervals dominating timbre across and between registers. The staff notation pitches are analogous to Balinese solfeggio, ding-dong-deng-deung-dung-dang-daing (with its changing vowel sequence *i o e eu u a ai)*, or ciphers 1234567.

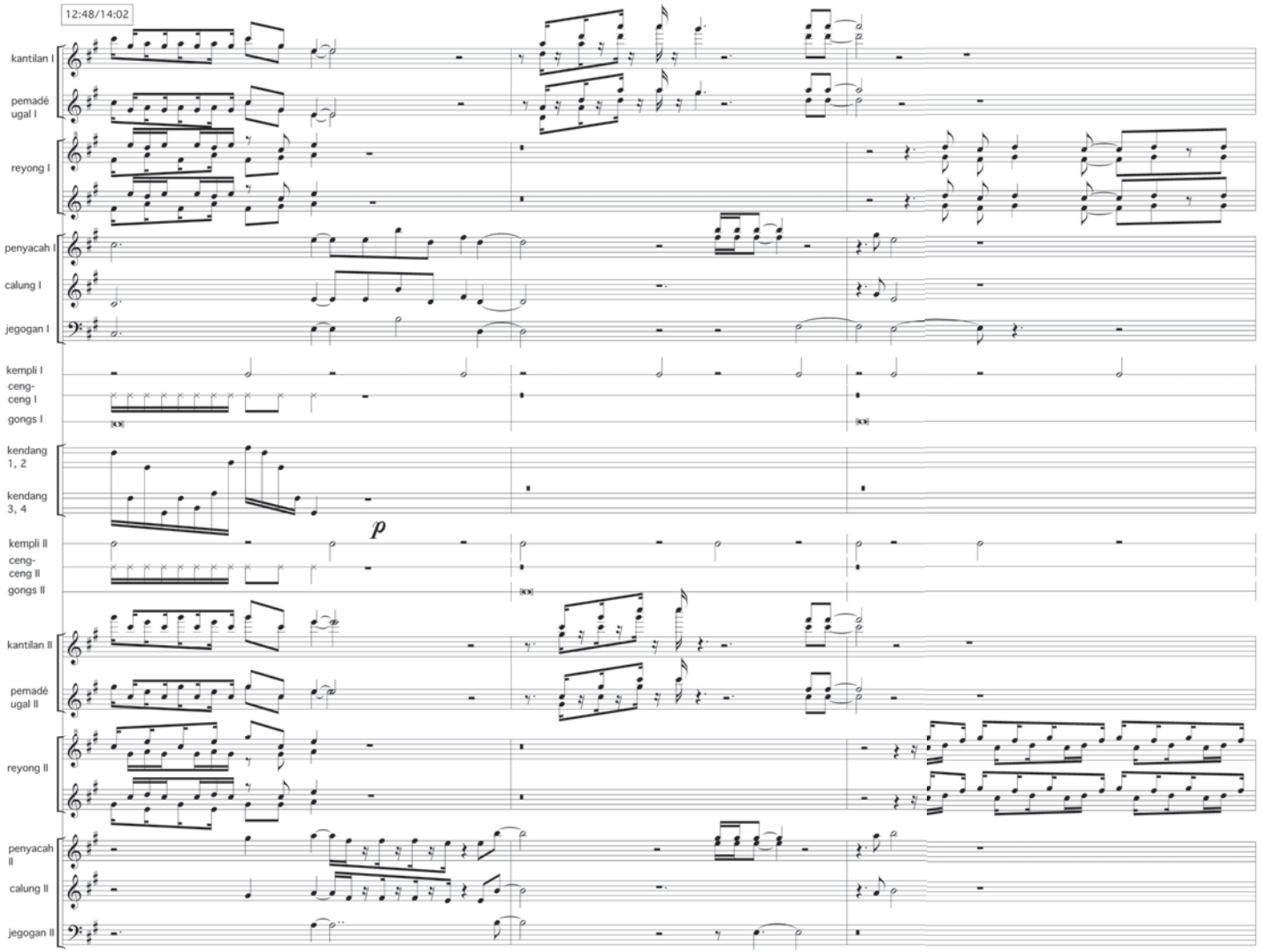
2. In traditional music two drums—high and low-pitched—play interlocking rhythms, and equivalent drum strokes are named differently for each drum in the pair. Here, two pairs are composed as a single interlocked set. The four drums are tuned highest to lowest, kendang 1 to kendang 4. Each two-line stave shows one of the four drums. Noteheads on each stave's lower line indicate a deep-pitched stroke, the space between shows a higher pitched stroke, and the upper line an unpitched slap. Within each pair, these are named *dag/tut*, *kum/pung*, and *kap/pak* for low/high drums respectively.

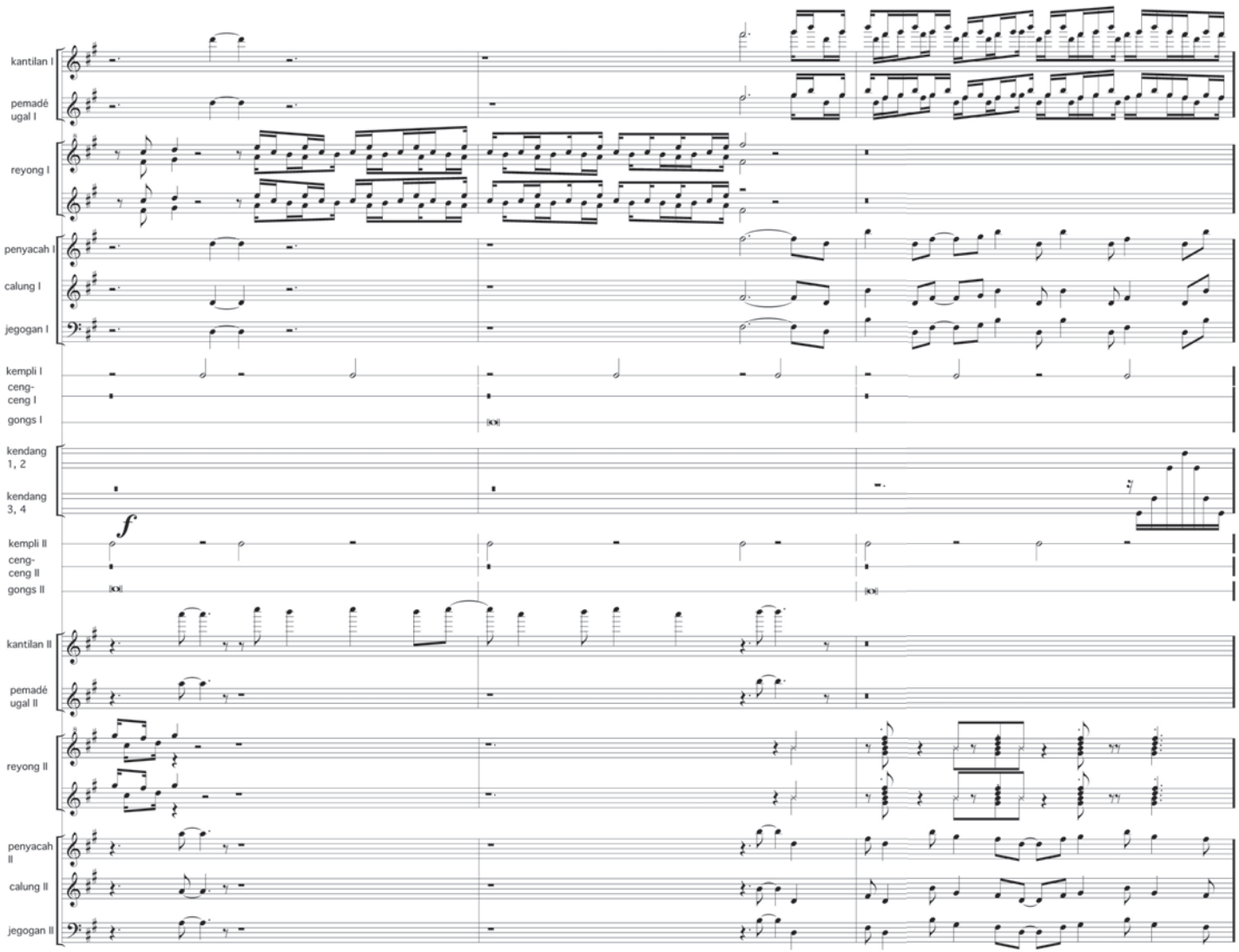
FIGURE 1 *Unstable Centre/Puser Belah*. Full score, *pengawak* section[3]

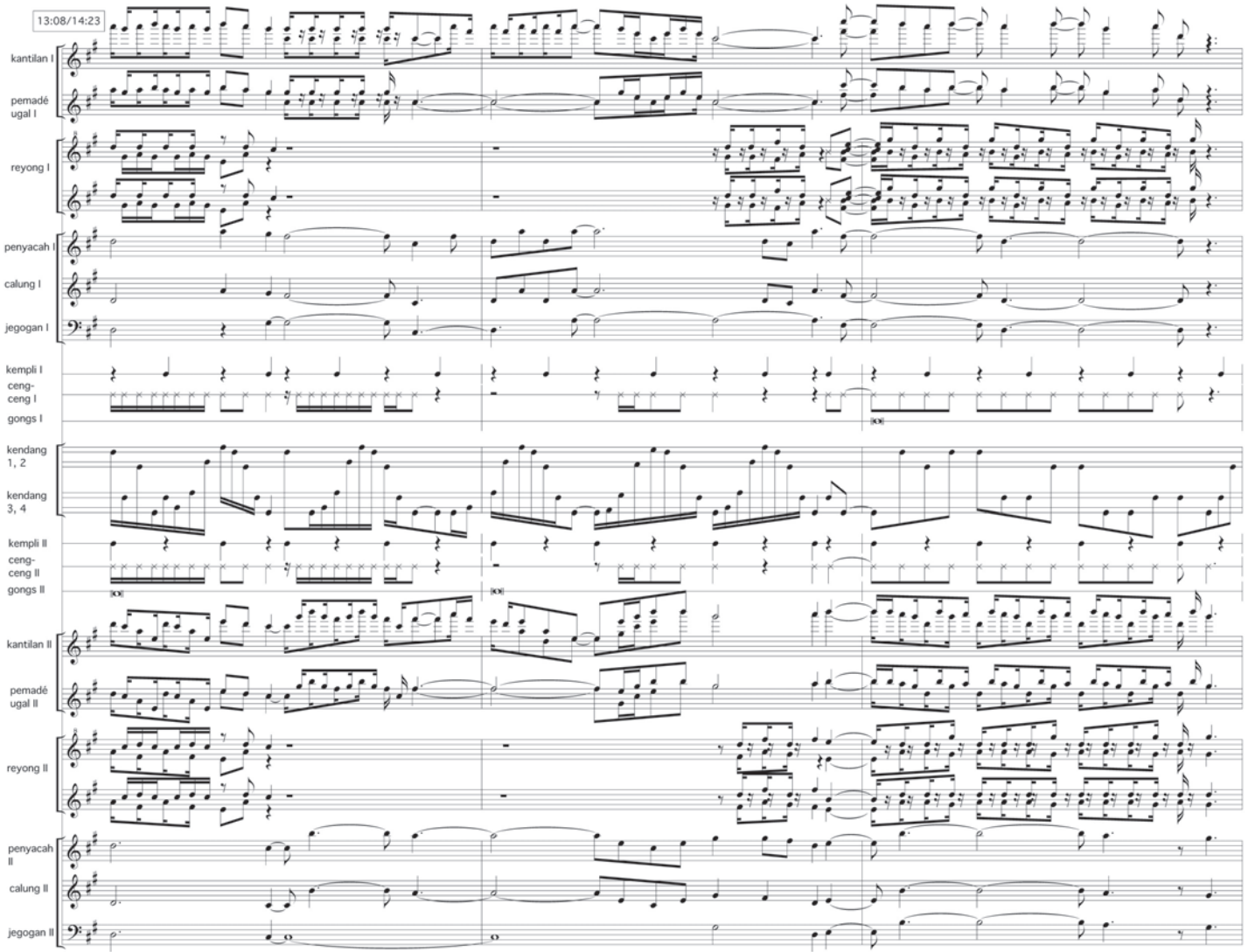


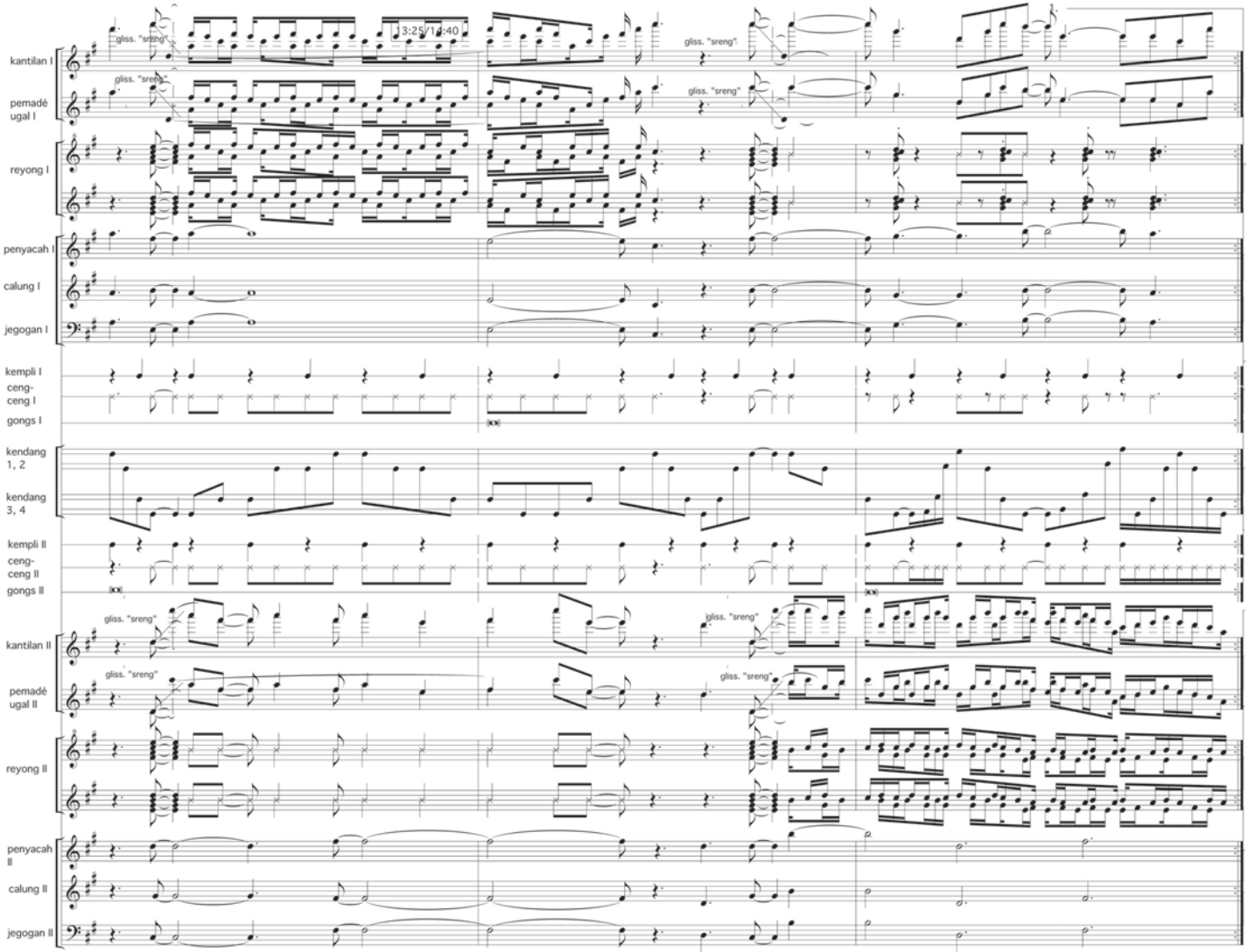
3. Corresponding to 12:18 – ca. 14:50 in the recording.

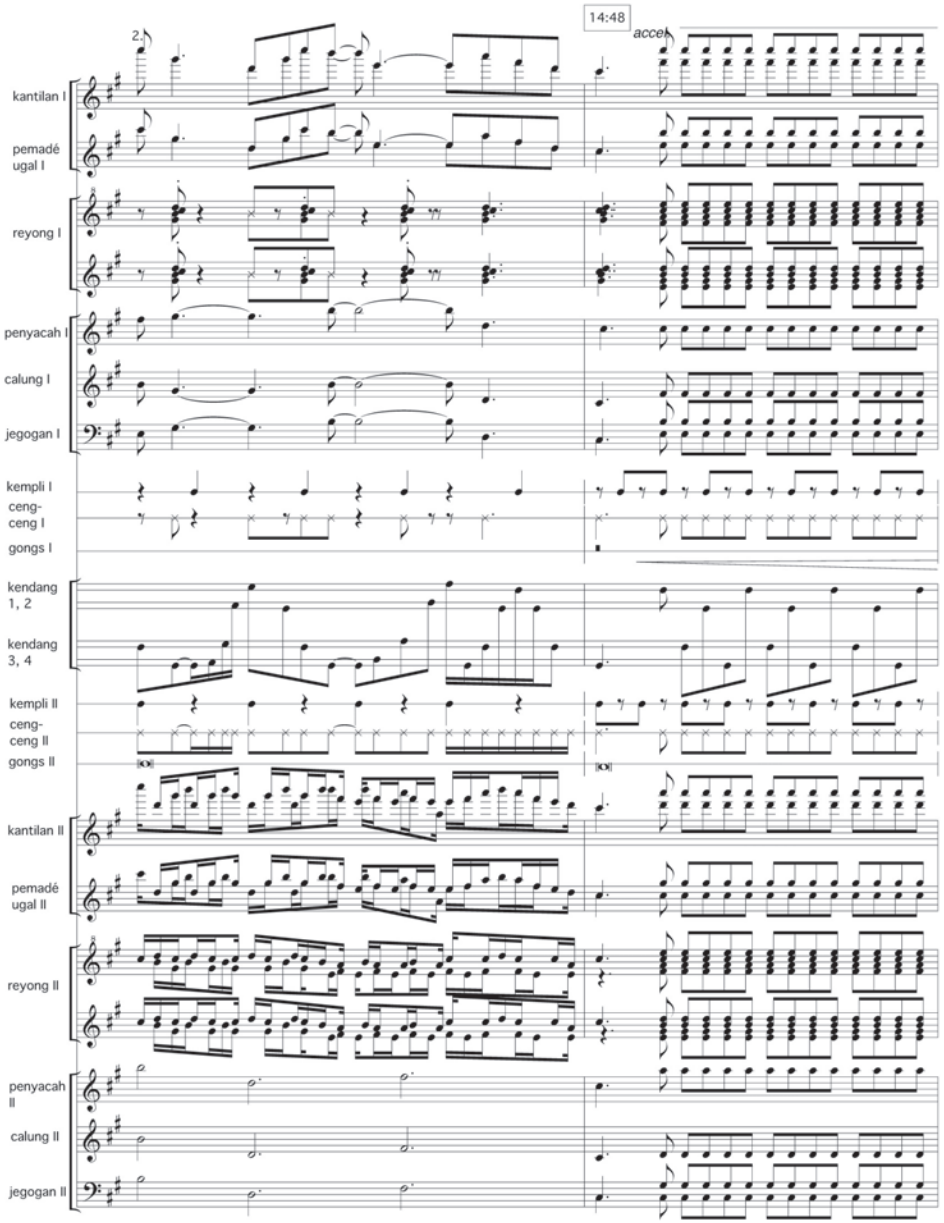

kantilan I
pemadé ugal I
reyong I
penyacah I
calung I
jegogan I
kempli I
ceng-ceng I
gongs I
kendang 1, 2
kendang 3, 4
kempli II
ceng-ceng II
gongs II
kantilan II
pemadé ugal II
reyong II
penyacah II
calung II
jegogan II


12:48/14:02
kantilan I
pemadé ugal I
reyong I
penyacah I
calung I
jegogan I
kempli I
ceng-ceng I
gongs I
kendang 1, 2
kendang 3, 4
p
kempli II
ceng-ceng II
gongs II
kantilan II
pemadé ugal II
reyong II
penyacah II
calung II
jegogan II


kantilan I
pemadé ugal I
reyong I
penyacah I
calung I
jegogan I
kempli I
ceng-ceng I
gongs I
kendang 1, 2
kendang 3, 4
f
kempli II
ceng-ceng II
gongs II
kantilan II
pemadé ugal II
reyong II
penyacah II
calung II
jegogan II


13:08/14:23
kantilan I
pemadé ugal I
reyong I
penyacah I
calung I
jegogan I
kempli I
ceng-ceng I
gongs I
kendang 1, 2
kendang 3, 4
kempli II
ceng-ceng II
gongs II
kantilan II
pemadé ugal II
reyong II
penyacah II
calung II
jegogan II


kantilan I
pemadé ugal I
reyong I
penyacah I
calung I
jegogan I
kempli I
ceng-ceng I
gongs I
kendang 1, 2
kendang 3, 4
kempli II
ceng-ceng II
gongs II
kantilan II
pemadé ugal II
reyong II
penyacah II
calung II
jegogan II
gliss. "sreng"
3:25/10:40

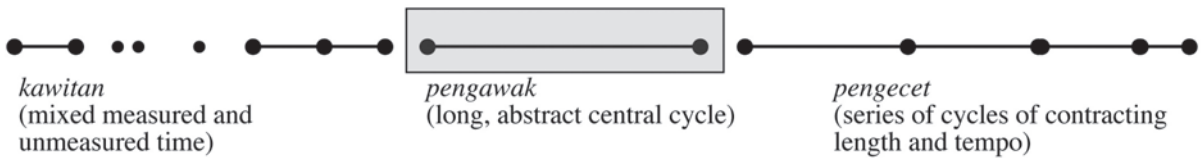

14:48
accel.
2.
kantilan I
pemadé ugal I
reyong I
penyacah I
calung I
jegogan I
kempli I
ceng-ceng I
gongs I
kendang 1, 2
kendang 3, 4
kempli II
ceng-ceng II
gongs II
kantilan II
pemadé ugal II
reyong II
penyacah II
calung II
jegogan II

Each gamelan's four *pemadé* (metallophones) range two octaves from D4 to C#6. Four *kantilan* are an octave above, and the single *ugal*, leader of the section, paraphrases the *pemadé* one octave below.[4] The 17 tuned gongs of a *reyong* extend from E5 to G#7 and are divided among four musicians, shown here on two staves in adjacent octaves and with opposite-facing stems. Here and with the *pemadé* and *kantilan*, stem-up and stem-down parts are a *divisi* arrangement enabling the Balinese technique of splitting melodic lines into interlocking parts; sometimes unisons or simultaneous dyads are employed also. The bass instrument *jegogan* has a single octave of seven tones spanning C#3 to B3; the denser part of the *calung* plays in the next octave and *penyacah* in the one above that. The full ensemble ranges from the *jegogan* C#3 to the *kantilan* C#7.

Unstable Centre tropes on the three-part form of *lelambatan*, the prestigious genre of Balinese ritual compositions (schematized in figure 2a). The first part of *lelambatan*, the *kawitan*, mixes unmeasured and measured time. The second, *pengawak*, is austere and abstract, set in one of a limited set of measured cyclic structures handed down from old court traditions. The generic name for such a cycle is *gongan*. The third, *pengecet*, concatenates several gongan in progressively shorter forms and faster tempi. The three parts have balanced symbolic dimensions, among them the gods of the Hindu trinity, or the passage from the inner (most sacred) to the middle, and finally outer (most secular) courtyards of a Balinese temple. Balinese music additionally reflects such balance merely by virtue of the gong strokes punctuating cyclic time, which symbolize permanence and unity. This is especially true in the strictly quadripartite structures of the various kinds of *pengawak*.

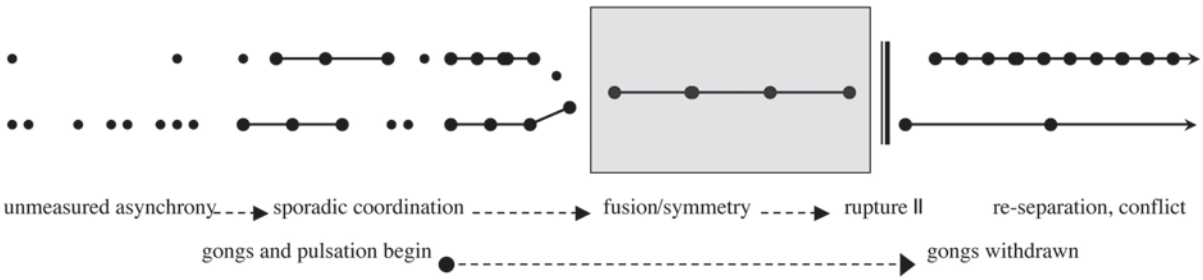
4. These instruments span two octaves in twelve keys, with five tones in the lower octave and seven in the upper: D-E-G#-A-C#-D-E-F3-G#-A-B-C#. Having only five tones in the lower octave reflects the ensemble inventor's expectations for the repertoire that was likely to have been played on it, for there was no seven-tone music at the time using a two-octave range. This has changed since, and there now exist even newer gamelan in which the "missing" tones have been supplied.

FIGURE 2A Schematization of Balinese *lelambatan* form



5. The two rows correspond to the two *gamelan*.

FIGURE 2B Schematization of form in *Unstable Centre*[5]



The deeply ingrained narrative of *lelambatan* is a powerful cultural force demanding a compositional response. World events suggested one. In October 2002, eight months prior to the first rehearsal, Bali was hit by terrorist bombs that killed hundreds and wrecked the island's economy. Disorder was at loose in the cosmos and Balinese flung themselves at a reinvestment in their traditions, confident that through offering, art, and prayer they could reinstate balance. Everywhere on the island priests and villagers oversaw more and bigger (and more expensive) collective purification rituals than they had known before. But the centre was unstable. How would fabled Bali's traditions endure this wrenching collision of worlds?

In precomposition I imagined a critical outsider perspective by undercutting assumption of the gong's permanence, making its arrival something earned through the individualist arc of the music's becoming. This led to the reconstruction of *lelambatan* narrative shown in figure 2b. The two gamelan begin as separate entities (read: cultures) acting without consciousness of each other, playing in different densities, floating in coexistent layers of unmeasured time. No gongs sound. Little by little they become mutually aware through passages of shared pulsation and thematic alignment. Elements of both cooperation and conflict coalesce but synchrony is sporadic. Gongs emerge to mark separate and irregular periods of coordination. At last, in the cited passage, the two gamelan play together in a fully cyclic format where all elements integrate and fuse. But this relationship ruptures explosively. Conflict returns on a canvas of conflicting pulsations and periodicities, indeterminate pitch, and the full withdrawal of gongs. The two entities emerge transformed, but as separate as they originally were. The grey boxes in figures 2a-b show that the fusion passage in *Unstable Centre* corresponds to the *pengawak*, the symbolic and spiritual heart of *lelambatan*.

South Indian Drumming

Studying South Indian *mrdangam* in Madras in 1988-89 yielded a compositional insight: Indian music fused open and cyclic time in such a way that it was well-suited to bridge the temporality of Western art music with that of Balinese cycles. In modernist Western music repetition is often eschewed and periodicity highly malleable, while in Bali cyclicity is the norm. Indian music has both: its fixed *tala* (metric periodicity articulated with hand gestures) supports constantly transforming rhythm. Could one not creatively imagine Balinese gong cycles as *tala* and invent a transformative musical language to fill them?

6. Figure 3a-d. Korvai in adi tala and its two variations. The 4+2+2 beat divisions of the *tala* are marked with the symbol / after beat 4 and 6 of the tala ; and // after beat 8. One tala contains eight beats, each subdivided into eight. The korvai lasts for three tala, thus 8 x 8 x 3 = 192 units. In 3a-c, numbers 1 to 28 at the far left relate to the discussion of figure 4.

FIGURE 3A Original korvai[6] (12:18 and 13:33)

1. dhi . dhi . dhi dom dom ka dhin . ka . tom	A (12)	X (8)	20	***(koraippu)***	*fig. 1 measure 1*
2. dhi . dhi dom dhom ka dhin . ka . tom . /.	A' (10)	X (8)	18		
3. dhi dom dom ka dhin . ka . tom . /.	A'' (8)	X (8)	16		
4. dhom ka dhin . ka . tom . / /.	A'''(6)	X (8)	14		
5. dhin . ka . tom	A'''' (4)	X (8)	12		
6. ka . tom	A''''' (2)	X (8)	10	(subtotal 90)	
7. ta . ki . nam . / dhom.	B (8+8+8)	Y (6)	30	***(mora)***	*fig. 1 measure 3, beat 7, 2nd eighth*
ta . ki . nam . dhom.					
ta . ki . nam . / dhom . tom					
8. ki . ta . ki . nam . / / dhom.	B'(10+10+10)	Y (6)	36		
ki . ta . ki . nam . dhom.					
ki . ta . ki . nam . dhom . tom					
9. dhi . ki . / ta . ki . nam . dhom.	B'' (12+12+12)	(end)	36		
dhi . ki . ta . ki . / nam . dhom.					
dhi . ki . ta . ki . nam . dhom .				(subtotal 102)	
				TOTAL 192	
				(= 3 tala)	

FIGURE 3B First variation of the korvai (12:43 and 13:58)

10. dhi . dhi . dhi dom dom ka dhin . ka . tom	A (12)	X' (6)	18	***(koraippu)***	*fig. 1 measure 7*
11. dhi . dhi dom dhom ka dhin . ka . tom . . . . /. .	A' (10)	X' (6)	16		
12. dhi dom dom ka dhin . ka . tom . . . .. . /	A'' (8)	X' (6)	14		
13. dhom ka dhin . ka . tom	A'''(6)	X' (6)	12		
14. dhin . ka . / / tom	A'''' (4)	X' (6)	10		
15. ka . tom	A''''' (2)	X' (6)	8	(subtotal 78)	
16. ta . ki . nam . dhom.	B (8+8+8)	Y (6+6)	36	***(mora)***	*fig. 1 measure 9, beat 4, 2nd eighth*
ta . ki . nam . dhom.					
ta . / ki . nam . dhom . tom . . . . . tom. . . /. .	B'(10+10+10)	Y (6+6)	42		
17. ki . ta . ki . nam . dhom.					
ki . ta . / / ki . nam . dhom.					
ki . ta . ki . nam . dhom . tom . . . . tom					
18. dhi . ki . / ta . ki . nam . dhom.	B'' (12+12+12)	(end)	36		
dhi . ki . ta . ki . / nam . dhom.					
dhi . ki . ta . ki . nam . dhom .				(subtotal 114)	
				TOTAL 192	
				(= 3 tala)	

FIGURE 3C Second variation of the korvai (12:08 and 14:23)

19.	dhi . dhi . dhi dom dom ka dhin . ka . tom . . .	A (12)	X" (4)	16	***(koraippu)***	*fig. 1 measure 13*
20.	dhi . dhi dom dhom ka dhin . ka . tom . . .	A' (10)	X" (4)	14		
21.	dhi dom / dom ka dhin . ka . tom . . .	A" (8)	X" (4)	12		
22.	dhom ka dhin . ka . / tom . . .	A"'(6)	X" (4)	10		
23.	dhin . ka . tom . . .	A"" (4)	X" (4)	8		
24.	ka . tom . //. .	A""" (2)	X" (4)	6	(subtotal 66)	
25.	ta . ki . nam . dhom.				***(mora)***	
	ta . ki . nam . dhom.					
	ta . ki . nam . dhom . tom . . . . . / tom . . . . . tom	B (8+8+8)	Y (6+6+6)	42		*fig. 1 measure 15, beat 1, 2nd eighth*
26.	ki . ta . / ki . nam . dhom.					
	ki . ta . ki . nam . dhom.					
	//ki . ta . ki . nam . dhom . tom . . . . tom . . . . . tom	B'(10+10+10)	Y (6+6+6)	48		
27-8.	dhi . ki . / ta . ki . nam . dhom.					
	dhi . ki . ta . ki . / nam . dhom.					
	. dhi . ki . ta . ki . nam . dhom .	B" (12+12+12)	(end)	36	(subtotal 126)	
					TOTAL 192	
					(= 3 tala)	

FIGURE 3D Renotates 3a-c with respect to the tala structure, showing four beats per line

dhi . dhi . dhi dom dom ka dhin . ka . tom . . . . . dhi . dhi dom dhom ka dhin . ka . tom . /
. . . . . .dhi dom dom ka dhin . ka . tom . . / . . . . .dhom ka dhin . ka . tom . . . //

. . . .dhin . ka . tom . . . . . ka . tom . . . . . ta . ki . nam . /
dhom . ta . ki . nam . dhom . ta . ki . nam . / dhom . tom . . . . . ki . ta . ki . nam . //

dhom . ki . ta . ki . nam . dhom . ki . ta . ki . nam . dhom . tom . . . . . dhi . ki./
ta . ki nam dhom . dhi . ki . ta . ki . / nam dhom . dhi . ki ta . ki nam dhom//

variant 1

dhi . dhi . dhi dom dom ka dhin . ka . tom . . . . .dhi . dhi dom dhom ka dhin . ka . tom . . . /
. . dhi dom dom ka dhin. ka . tom . . . . . / dhom ka dhin . ka . tom . . . . . dhin . ka . //

tom . . . . . ka . tom . . . . . ta . ki . nam . dhom . ta . ki . nam . dhom . ta . /
ki . nam . dhom . tom . . . . . tom . . . /. . ki . ta . ki . nam . dhom . ki . ta . //

ki . nam . dhom . ki . ta . ki . nam . dhom . tom . . . . . tom . . . . . dhi . ki . /
ta . ki nam dhom . dhi . ki . ta . ki . / nam dhom . dhi . ki ta . ki nam dhom //

variant 2

dhi . dhi . dhi dom dom ka dhin . ka . tom . . . dhi . dhi dom dhom ka dhin . ka . tom . . . dhi dom /
dom ka dhin . ka . tom . . . dhom ka dhin . ka . / tom . . . dhin . ka . tom . . . ka . tom . //

. . ta . ki . nam . dhom . ta . ki . nam . dhom . ta . ki . nam . dhom . tom . . . . . /
tom . . . . . tom . . . . . ki . ta . / ki . nam . dhom . ki . ta . ki . nam . dhom . //

ki . ta . ki . nam . dhom . tom . . . . . tom . . . . . tom . . . . . dhi . ki . /
ta . ki nam dhom . dhi . ki . ta . ki . / nam dhom . dhi . ki ta . ki nam dhom //

tom (concluding stroke at beginning of next tala)

One way was to transform South Indian rhythms by melodicizing and orchestrating them. Among the jewels of South Indian music are *korvai* (crowns), extended rhythmic compositions lasting multiple tala. Their key feature is the systematic reduction or expansion of rhythmic cells such that sum of the durational values of the rhythms fills a precise number of a tala and ends at some predetermined timepoint, usually the tala's beginning. Successive cells are often separated from one another with semicolon-like pauses. The systematic and easy-to-hear reduction and/or expansion of a cell is independent from the tala's steady pulsation. This causes the onset of each transformed cell to land in different alignment with the pulsation, creating a plane of changing group structures in tension with the stable periodicity. When at last the *korvai* concludes the sense of completion is strong, analogous in some ways to a gong stroke.

The *korvai* (figure 3a-d) structuring the fusion section in *Unstable Centre* is heard thrice, once in an original form and then in two variations. In figure 3 all three versions are notated with *solkattu*, drum mnemonics. The underlying *tala* is of eight beats *(adi tala)*, each beat subdivided into eight, yielding a canvas of 64 subdivided values per cycle to be filled. The eight main beats are grouped into 4 + 2 + 2 by hand gestures. Divisions internal to the cycle are shown with / and each new cycle is indicated by / / .

The korvai's two parts are each based on a sole rhythmic cell, a characteristic procedure. The cells and their transformations, shown one per line, are arranged in a conventional *damaru yati* (hourglass) shape, in which the first cell A *(dhi . dhi . dhi dom dom ka dhin . ka .)* lasts for 12 units. Dots lengthen the value of a preceding stroke by one unit each.

Every occurrence of A is separated from the next by the syllable *tom*, labeled X. Cell A is systematically reduced (a process called *koraippu)* by chopping off two units from the beginning each time until only 2 *(ka .)* remain. The full sequence, with the number of unit values in parentheses, is A(12)-X(8)-A(10)-X(8)-A(8)-X(8)-A(6)-X(8)-A(4)-X(8)-A(2)-X(8). The total is 90 units, or 1 tala plus 26 units.

A is then supplanted by the second cell, B. B is presented in three groups of three statements each. Its initial value is 8 units but it expands to 10 and 12 by the addition of prefixes to complete the *damaru yati* shape. This second section is called the *mora*, and there are *tom* strokes separating its three large phrases. *Tom* in the *mora* is labeled Y. The sequence here is B(8+8+8)-Y(6)-B(10+10+10)-Y(6)-B(12+12+12). The total is 102 units which, when added to the 90 of the first part gives 192 (=64x3) units, or three times through *adi tala.*

In the two variants of the korvai only the values of X change at first, but this dramatically realigns the cells each time, shortening the *koraippu* section

and forcing a lengthening of the *mora*. Only the opening A and closing B do not realign, being unaffected by changes in X. There are six *tom* (X) in the *koraippu* and two (Y) in the *mora*. In the original, *tom* has a value of 8 units at the beginning and six during the *mora*. In the first variant (figure 3b), two units are subtracted from each X at the beginning, leaving behind 6 of the original 8. Since there are six of these, the process yields a total of twelve (6 x 2) units to be distributed 6+6 between the two Y of the *mora*. At these points *tom* is repeated rather than lengthened *(tom . . . . . tom . . . . .)*.

In the second variant (figure 3c), the process continues in exactly the same way leaving only 4 units to each X. The 12 units thus gained are distributed in the *mora* as before to yield three Y in a row *(tom . . . . . tom . . . . .tom . . . . .)*.

In figure 1 some rhythm values indicated by dots are filled in, and the B phrases of the mora were treated as single events rather than as a cell played thrice (as 24 rather than 8+8+8, for example). But otherwise figure 3 is its strict basis. The problem of how to melodicize the rhythms was interpreted as a matter of creating convincing contrast between them with the available pitch gamut, to boost the independent character of each cell. This in turn was conceived as a problem of harmonic motion.

Set class and harmony

The seven-tone *pélog* scale comprises seven culturally equivalent but acoustically unequal scalar steps. It is traditionally the basis for a collection of five-tone modes comprising three adjacent steps of the scale, then a gap, then two more adjacent steps, then a second gap (eg. 123-56-; 234-67-, etc.). All intervals in these modes are functionally alike once distilled from the seven-tone aggregate set; ie., the gap intervals are understood as steps and not leaps. The key to the character of the modes is the gaps, which create an acoustic distinction between large and small modal step-sizes (even though they function identically).

In older Balinese repertoire change from mode to mode rarely happens more than once during a composition. In music since 2000 more frequent shifts have become the norm. Movement among modes creates acoustic and expressive contrast as the interval sizes change and the gaps shift to different notes. But any two of these gapped five-tone collections must have three common tones by definition, which limits contrast between juxtaposed modes. Moreover such movement, even in recent music, is too slow to feel anything like harmonic movement in the Western sense. Typically, a mode will be linked to a melody or entire section of a piece. Yet a palpable harmonic rhythm was what I hoped to evoke.

To sharpen harmonic contrast so that I could accelerate it, I identified the set of two-gapped four-tone modes. Four-tone collections made it possible for pairs of modes to have only one common tone, an intensification of contrast. It also limited the number of tones in a given harmony, thus simplifying and clarifying its proper timbre. Here one of the gaps must be larger than the other, creating a third step-size, acoustically speaking.[7] 28 such four-tone collections are possible, deriving from the TI-related set class-pairs 1235/1236 and 1245/1256, each used in seven transpositions. They can be arranged in a ring, cyclically linking collection 28 back to collection 1, as shown in figure 4. Each link in the ring stands for a unique collection/mode/harmonic region.

7. For example in the collection 1235, the gap between 3 and 5 skips one step, while that between 5 and 1 skips two. 1234 or other four-tone collections made only of adjacencies cannot be included as the sole gap is between 4 and 1.

FIGURE 4 28 unique two-gapped, four-tone collections drawn from the seven-tone *pélog* scale, ordered as a ring in which any pair of adjacent modes has only one common tone

1 2 3 5—2 4 6 7—1 3 4 5—2 3 6 7—1 4 5 6—2 3 5 7—1 4 6 7—2 3 5 6—1 2 4 7—

1 3 5 6—2 3 4 7—1 2 5 6—3 4 5 7—1 2 4 6—3 5 6 7—1 2 4 5—1 3 6 7—2 4 5 7—

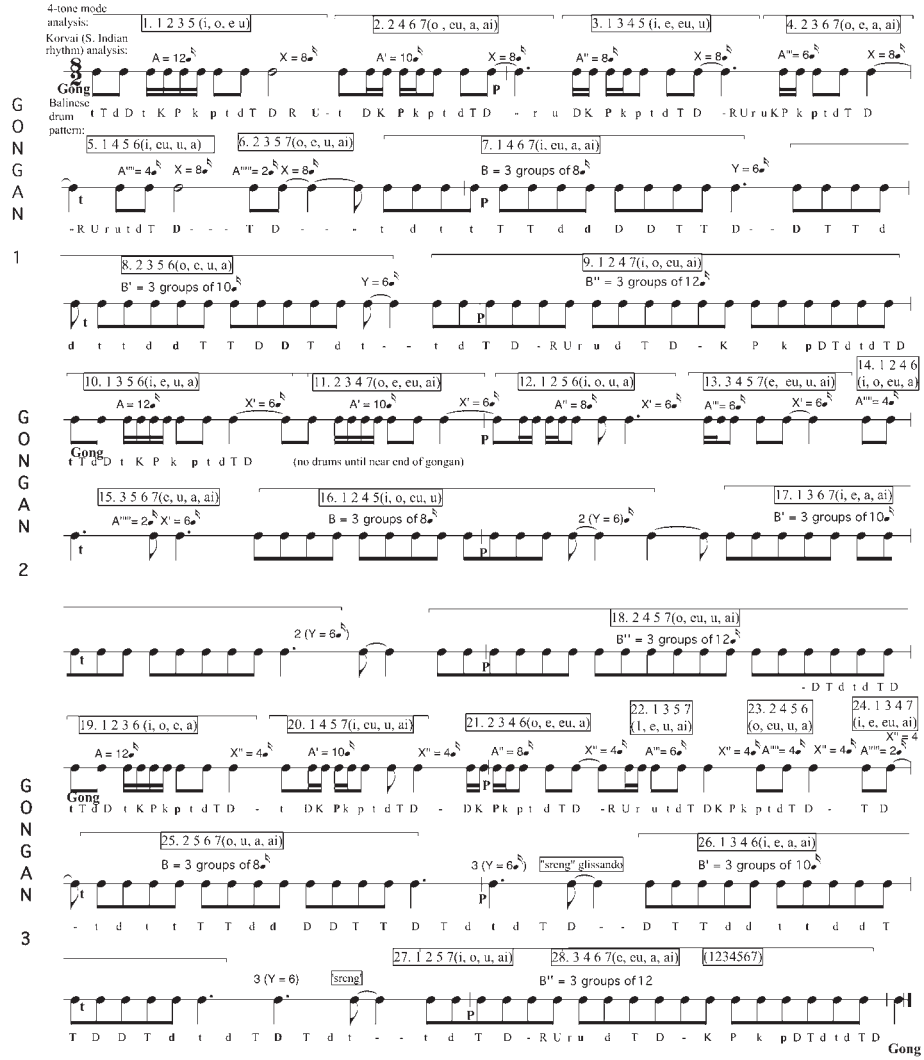
1 2 3 6—1 4 5 7—2 3 4 6—1 3 5 7—2 4 5 6—1 3 4 7—2 5 6 7—1 3 4 6—1 2 5 7—3 4 6 7

Thus ordered, the collections were assigned one each to cells in the korvai and its two variants, as shown at the far left of figure 3. Natural phrase divisions in the korvai suggested nine such groups in each, thus 27 in all. At the end of the *mora* of the second variation (figure 3c) the harmonic rhythm doubles in phrase B" to encompass pitch collection 28. The *pengawak* cycle now comprised a self-consistent harmonic progression distributed in a symmetrical Balinese durational space, according to Indian principles of how to segment that space asymmetrically.

Combining the Elements

In figure 5, a sketch of figure 1, the rhythms of figure 3 are written out on a staff. Below them the *solkattu* syllables are transformed into Balinese drum strokes, abbreviated t, d, r, u, k and p for drums 1 and 2; and T,D,R,U,K and P for the deeper drums 3 and 4 (see footnote 2). Sometimes the Balinese drum rhythms adjust the Indian ones, mainly by filling in some durations (usually indicated where the Balinese strokes are underlined), but without affecting the main phrasing. Above this the 28 4-tone collections are indicated in cipher and with the vowels of Balinese solfeggio (see above). Each of the three statements of the korvai is taken as one cycle *(gongan)* and punctuated with the Balinese *gong*, *kempur (P)* and *klentong (t)*, indicated below the staff line.

FIGURE 5 *Pengawak* of *Unstable Centre:*
composite sketch of rhythm and pitch organization



The main elements of the *pengawak* have now been described, save for the details of how they were worked out in Balinese orchestration. Transforming figure 5 into figure 1 was a matter of free composition in a relatively Balinese style, weaving stratified melodies, interlocking figurations and contrapuntal textures (common in recent gamelan music by Balinese composers) to enhance the source rhythms and harmonic palette. The rule of four-pitches-at-a-time was strictly followed save for a few instants before or after gong strokes,

where pitch motion is characteristically higher in Balinese music (e.g., the beginning of measure 1 or end of measure 18). Existing Balinese gestures and patterns were avoided, which was simple because the *korvai* does not suggest a Balinese rhythmic continuity. The drums were removed in the middle *gongan* for the contrasting transparency of texture that provided. The Y rhythm in the *mora* is realized as a lone tolling tone the first time, and, due to the added *tom*, a call-and-response between tones the second. The final time, the (added) third *tom* is played as a glissando (called *sreng*, a Balinese onomatopoetic term; see figures 1 and 5) across the metallophone keys, a summary gesture. This is perhaps the climax of the *korvai* and its variants, celebrated with the musicians' broad physical movement in making the sound, and the clangorous cluster it produces.

The musicians, none of whom (myself excepted) had prior experience with Indian rhythm, spent 7 four-hour rehearsals memorizing and mastering the music of figure 1 until they could play it as they do on the recording.

Musical Fusion, Feeling, and Social Action

Actual musical fusion is an illusion, especially in comparison to notions of atomic fusion to which we may intuitively refer. Each musical element fused can only have a metonymic relationship to its source tradition, and metonymy is no more than a glimmer of the richness it has been selected to encapsulate. There are so many imaginable paths to musical fusion that have nothing to do with the approach I pursue. It could be, for example, that the use of Balinese instruments forever makes this music irreducibly Balinese to outsiders. Suggesting fusion to non-experts might have been much more simply and directly accomplished merely by combining musical instruments of different cultures, since instruments are arguably a more forceful marker of cultural identity than structures.

To the Balinese who played *Unstable Centre* the music was decidedly *not* Balinese. Even though it exploited gamelan instrumental capabilities, the materials suggested no familiar idiom to them. But what was it, then? They were able and curious to learn it, understanding that *feeling* it—their core desideratum—might come at a later stage. I believe that by "feeling", they meant an easy ability to relate it to the familiar, and how *that* feels. This was not an issue for the non-Balinese players, whose core desideratum is itself embracing the unfamiliar. Like all fusions, indeed like all music, meaning and association are entirely dependent on where one stands and the cultural ears one uses.

Unstable Centre could be seen as an individualist Western project because it is so conscious of its own innovatory structures and because it both imitates and consumes its sources with the assistance of an explicitly theoretical

technology. It is not concerned particularly with feeling or expression, but with integration and self-transformation. It has its particular cosmopolitan qualities because I had a certain education, opportunities for research funding, and exposure to many musics over many years.

But its collective dimension, the same tidal wave that overwhelmed Steve Reich, ingests and bestows proper insignificance on what was created. The Balinese courtyard where people gather together to learn music and create communal social action is a force with a long and fruitful history. That is in itself feelingful, and with any luck a sympathetic observer may see it as human fusion of a different order, one with an old and awesome provenance.

Striving for a new unity, fusion seeks to escape labels and associations such as these. Whether or not it ever can is an open question. Yet the pieces of a musical life—composition and ethnomusicology, research and creation, Asian and Euro-American aesthetics of time and sound, individual and collective work—were felt, at least by this musician, to be much more indissoluble after this music was created than before.

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