REYONG NOROT FIGURATION: AN EXPLORATION INTO THE INHERENT MUSICAL TECHNIQUES OF BALI

by

LESLIE ALEXANDRA TILLEY

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Department of Music

The University of British Columbia
Vancouver, Canada

Date April 23, 2003
Abstract

*Reyong Norot* Figuration: An Exploration into the Inherent Musical Techniques of Bali is an account of one scholar’s immersion into the music of the *gamelan gong kebyar* – a modern secular genre of Balinese “orchestral” music for bronze metallophones, gongs, and hands drums. Its purpose is threefold. The first part is an anthropological, participant-observer study of *gong kebyar* music and its many facets, both technical and sociological. It seeks to describe how the various elements of the music interconnect, and to explore ways in which these musical relationships reflect aspects of Balinese society.

The second part, the main body of the thesis, is a musical analysis of *norot* – a style of melodic elaboration in *gamelan* music – as it is realized on the set of twelve small mounted gongs, played by four musicians, called *reyong*. The *reyong* is one of the only instruments in the *gamelan* that may be “improvised” upon, though its improvisatory freedom seems to be guided by strict constraints – inherent and, consequently, unconscious. My analysis – based on hundreds of *reyong norot* variations, as played by the well-known Balinese musician and composer Dewa Ketut Alit – is an attempt to uncover, essentially at the microscopic or cellular level, the inherent set of “rules,” as it were, for *reyong norot*, and to create, with a linguistics-inspired model, a grammar for *norot* figuration. This grammar is determined by establishing a stylistically relevant *norot* model or template on which all *reyong norot* elaborations are at least loosely based, and then creating a finite set of categories which explain all of the elaborations that do not adhere to the master template.

The final purpose of this thesis is to offer a critique on the field of ethnomusicology as a whole – to explore the various directions that the field has taken in the last century and to incite a dialogue into areas of focus that have been neglected in recent years. It is a humble attempt at enriching the ethnomusicological canon with a fresh perspective from a less anthropology-based angle – that of music-theory-based analysis.
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CHAPTER I: *Gamelan Gong Kebyar: A Personal Account*

1.1 Introduction

My research into reyong norot figuration, a very small and specific aspect of the popular instrumental genre of Balinese music known as *gamelan gong kebyar*, arose out of a sense of necessity, triggered by a combination of curiosity, frustration, and amazement. It is an attempt to explain, through an amalgamation of Balinese and Western musical theory, as well as some analytical categories of my own invention, the one aspect of this genre that was still a complete mystery to me after three years of studying and playing it; the one element of this beautiful and complex music that did not seem to me to be fixed, or even very explicable or logical. It was a long and enriching musical journey that brought me to this breaking point – this absolute need to study, in depth, one particular style of elaboration played by one single instrument in one of hundreds of genres of music from one tiny island of the Indonesian archipelago. In order to fully explain this need, I must tell the story of my own development as a Balinese *gamelan* musician and, later, scholar.

My first exposure to *gamelan* music was almost a chance encounter. I had completed my undergraduate degree in musicology at a small university in Nova Scotia, on the East Coast of Canada. At that time, the extent of the Asian influence in my home province was a few bad Chinese-American restaurants peppered through every town, and a small shelf in one aisle of every major grocery store selling fortune cookies, curry powder, and *Soya* sauce. Though this may be something of an exaggeration, it is sadly not much of one. The token “world music” course offered at my university, geared towards non-music majors, had given a brief overview of several genres of music, going deeply into none. I had learned something about a handful of musics worldwide, but mostly focused on the folksongs of the British Isles, my own cultural roots. Other than the name of Ravi Shankar, I knew virtually nothing of Asian music. Despite, or perhaps because of this limited exposure, I decided to pursue graduate studies in ethnomusicology at the University of British Columbia in the fall of the year 2000. In my first meeting with my academic advisor, I was told that, as part of my program, I was required to play in an Asian music ensemble. My advisor recommended the Balinese *gamelan*, directed by Michael Tenzer. Pretending I knew what both Bali and a *gamelan* were, I said “sure.”
Figure 1.1. The *Gamelan Gong Kebyar*.\(^1\)

\(^1\) Tenzer, 1998: 34-5.
The first day that I walked into the gamelan room in the basement of UBC's Asian center, armed only with the newly-acquired knowledge that gamelan, in Indonesian, means simply “orchestra,” and refers to any one of countless different combinations of largely percussive instruments in a complete and inseparable set, I was captivated by the beauty of what I saw. These instruments, shown in the illustration in Fig. 1.1 above, were like none I had ever seen before. There were various sizes of bronze metallophones, built into intricately ornamented red and gold wooden cases, which, I later learned, held plastic PVC tubing, modeled after the traditional bamboo resonating tubes, under each bronze key. Next to each of these was a rather lethal looking hammer of sorts, actually the mallet or panggul used to play the instrument. There were also a few two-headed cylindrical hand drums lying on the floor, several hanging gongs of various sizes, each with a raised circle or boss in the center, and two long ornamented troughs filled with what looked like upside-down pots with bumps in the middle, but which I later learned were small gongs tuned to the same pitch classes as the metallophones opposite them. There were a handful of other instruments that I could not identify.

In a blur of information I half-heard while taking off my shoes – what a strange class this was – I learned that Balinese instruments are not tuned like Western ones; that the instruments for this genre of music, the gamelan gong kebyar, which is a secular genre of the people developed in Bali in the early part of the twentieth century, were tuned to a five-tone scale known as pelog. Because Balinese tuning is not standardized, the actual pitches of the pelog scale may vary quite significantly between two different sets of gamelan instruments. For our purposes, however, they translate roughly into C#-D-E-G#-A, named respectively, in Balinese solfege, ding-dong-deng-dung-dang (which I will often abbreviate as i-o-e-u-a.) I also learned that the Balinese use a technique known as paired tuning – that each of the metallophones was tuned to be slightly higher or lower than the virtually identical instrument next to it, so that the carefully measured difference tone created in the frequencies between

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2 For an in-depth analysis on many aspects of the gong kebyar genre in particular, please refer to Colin McPhee's *Music in Bali* and to the more recent and accurate studies of Ornstein, Tenzer, and Vitale, cited in the bibliography.

3 When it is relevant – i.e. when I am discussing the two-octave ranges of neli, ugal, and gangsa lines, I will use upper case (capital) letters for the lower octave of these instruments and lower case (small) letters for the upper octave. Because of the concept of octave equivalence discussed later, I will not do the same for my reyong transcriptions.
each of the keys in an instrument pair would produce a shimmering quality to the music. Everything else that I heard that first day, I forgot as quickly.

I sat down by chance at the third of four stations on one of the long troughs of small gongs, actually called the reyong. This instrument is played by four people, each controlling a limited number of its gongs, striking the bosses in their centers for pitched tones, or tapping the sides of the gongs for a percussive sound known as kecekan. The four stations or positions, which at the time I labeled, from lowest to highest, one, two, three, and four, are actually called, respectively, penyorog, pengenter, ponggang, and pemetit. The playing positions of the reyong are illustrated in Figure 1.2 below:

![Diagram of reyong playing positions]

Figure 1.2. Playing positions of the reyong.

I took my two panggul – in this case long sticks wrapped, in the top half, with smooth white string – into my hands, and waited for instructions.

Gamelan music is taught entirely by rote, in a learning process that I have come, affectionately, to call learn-forget-learn-forget-learn-remember-no, wait... forget-learn-remember. When we learned a new piece, as we began to on this first day, Dr. Tenzer, Michael, our barefoot, jean-clad American gamelan guru – this was going to take some getting used to – moved through the different instruments, beginning with the various metallophones, teaching small sections of music at a time, which we then cycled endlessly until we were confident with them. During that first rehearsal, and the several weeks that followed, I was unaware of what anyone else was playing, so desperately was I trying to stay afloat. If I listened too carefully to what Dr. Tenzer taught to any other player, I would immediately forget what I was meant to be playing, so I blocked out the rest of the teaching process, and concentrated on my three little gongs of the reyong.

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4 Tenzer, 2000: 47. In the original figure, Tenzer also outlines extensions of the ranges of each position, used in special cases. These are not discussed here.
When the French composer Claude Debussy first heard a Javanese *gamelan* at the 1889 Paris International Exhibition – the earliest well-documented incidence of the West’s exposure to Indonesian music – he was moved and inspired, and the sounds that he heard influenced his later works. When the Canadian composer Colin McPhee came across a 1920s recording of Balinese music released by the Odeon company, he was so intrigued that he traveled to the island of Bali in 1931 – the same year that the first Balinese group toured abroad, to Paris,\(^5\) and lived there fairly steadily for eight years, studying the music, the instruments, and some of the culture of the Balinese people. For the next three decades, he wrote field reports, articles, and books based on his research, while seeking to preserve through transcription the traditions that he saw as being endangered, and to compose music inspired by the new soundscapes he had encountered. *Music in Bali*, the culmination of his thirty-five years of study and analysis, explores aspects of Balinese tuning, instruments, notation, terminology, and idiomatic playing styles, as well as various compositional forms, complete with musical examples.

When I first heard the *gamelan gong kebyar*, that first rehearsal with Michael Tenzer and the UBC *gamelan* in the fall of 2000, my only thought was “what have I gotten myself into?” In truth, I hated it – I didn’t understand the music and I found it to be cacophonous and messy. This may have had something to do with the fact that we were all beginners and had not yet learned to dampen each ringing bronze key as we struck the next, but had probably most to do with the fact that I was so intent on not making a mistake that I forgot to listen, to really listen.

While I soon stopped hating *gamelan* music, understanding and passion both came much later. All that I knew, as I played the *reyong*’s third position *ponggang* part for the dance piece, *Baris*, was that my own part was either similar or identical to the first position *penyorog*, and that we were cycling our parts seemingly indefinitely, not just for rehearsal but because that was how the music was composed; while the *gamelan gong kebyar* style emphasizes some flashy and rhythmically irregular through-composed sections, a large portion of Balinese *gamelan* music is cyclical, returning continually to its starting point and proceeding with immediate melodic repetition, though often with significant variation in

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tempo, dynamics, and melodic elaboration. My own part in the cycle of Baris, which I had transcribed after that first rehearsal for fear of forgetting its unfamiliar rhythmic make-up, was:

![Figure 1.3. Ponggang reyong realization for Baris.](image)

I did not yet understand, or care, how the other parts fit with mine, though I was told that I was interlocking with the pemetit player above me. Later, I understood that she was playing:

![Figure 1.4. Pemetit reyong realization for Baris.](image)

Together, we interlocked as:

![Figure 1.5. Interlocking ponggang and pemetit parts for Baris.](image)

I did realize that the kempli (which we often abbreviate as k), a small mounted gong struck by what looked like an oversized reyong panggul, acted as my metronome, being struck every pulse or beat, most often the equivalent of a Western quarter-note. I knew, but did not really understand, that this instrument along with the two hand drums called kendang and the large metallophone placed in the midst of eight smaller ones, called ugal, was one of the leaders of the gamelan. These four instruments together controlled tempo and dynamics, as well as shifts into new sections and the occurrence of the strongly articulated rhythmic portions in certain cycles, known as angsel.

In addition, I eventually learned that if I got lost in my cycle, I needed only to listen to the pattern of hanging gong strokes to reorient myself. The structure of cyclic Balinese music may be called “colotomic,” a term coined by the Dutch explorer, colonial
administrator and academic Jaap Kunst – who wrote a great deal of the early
ethnomusicological literature on Indonesian music, particularly that of Java – to describe
music made up of recurring cycles punctuated by a fixed pattern of gong strokes. The
hanging gongs, thus, serve a colotomic function. I later learned that a single statement of a
given cycle is known as a gongan, so named because its end is marked by the stroke of the
largest hanging gong, the gong ageng (often abbreviated as G). The medium-sized kempur
(P) and the small kemong or klenong (t), also free-hanging gongs, mark different parts of the
cycle, depending on the gong pattern of the piece. Two very common gong patterns for an
eight- or sixteen-beat gong kebyar cycle are gilak: (G) _ _ _ G P _ P G, the pattern used in
Baris, and a simple Bapang pattern: (G) _ P _ t _ P _ G.

Though I did not yet understand or feel the music in this way, I also learned in these
erly months that, in Balinese gamelan music, the stress is placed not at the beginning of a
cycle or period, but at its end; an eight-beat cycle felt, by a Western musician, as
1-2-3-4-5-6-7-8, with a gong stroke on the accented 1, would be counted 8-1-2-3-4-5-6-7 by
a Balinese musician. This is why, in the gong patterns above, I have placed the first gong
stroke in parentheses – it actually belongs to the previous cycle. Similarly, when discussing
the four subdivisions of a single pulse, as I will be throughout this analysis, the accent falls at
the end, not at the beginning of the beat. Two kempli beats, which I will transcribe on a
Western staff from now on as two quarter-notes, when divided into sixteenth-notes, would
not be thought of as 1-2-3-4-1-2-3-4, but as 4-1-2-3-4-1-2-3. For reasons of both analytical
accuracy and consistency with a Balinese way of thinking about their music, this is the
system that I will be using from now on, a distinction that will become very important in the
analysis that follows. In my own development with gamelan music, however, I was still a far
cry from the desire, let alone the wherewithal for analysis.

1.2 A Broadening Perception of Gamelan Music

With each new piece that I learned, another element of gamelan music became clear
to me. In the next piece that we began that first year, a contemporary composition called
Wahyu Giri Suara, I played a new instrument – the kantilan. This is one of the eight two-
octave range metallophones that surround the ugal leader, and are collectively known as
gangs. The gangs are divided into four mid-range pemadé, pitched one octave higher than
the *ugal*, and four *kantilan*, that, an octave higher again than the *pemadé*, make up the high end of the *gamelan*’s pitch spectrum. Each of these groups of four instruments is divided again, with two players of each instrument playing what is called the *polos* line, the part that I myself was playing, while the other two play a different line, known as *sangsih*. Initially, *polos* and *sangsih* to me meant, respectively, easy and really, really hard. In Balinese, however, the words mean, respectively, simple or basic, and different, following, or complementary. The two components – *polos* and *sangsih* – may play the same rhythms but with different notes or they may interlock. In a non-interlocking line, I discovered quite quickly that the *sangsih* player beside me was consistently playing the key at an interval of three scale tones above my own part, falling into unison with me when that interval fell outside the range of the instrument. This interval of three scale tones is called a *kempyung* or *ngempat*.6

For me to truly understand the interlocking *gangsa* parts, called *kotekan* – a term that refers to any melodic interlocking part in *gamelan* music – I had to first both aurally and physically experience them. My understanding of *kotekan* – my moment of eureka, as it were – came a few weeks after I had begun to play the *kantilan*. We had just learned a new eight-beat *kotekan* in *Wahyu Giri Suara* and were dutifully cycling it until we could play it well. In Fig. 1.6 below, the *polos* of this *kotekan* is notated stems down and the *sangsih*, stems up, as will be the norm in all *polos/sangsih* notations in this analysis:

![Figure 1.6. Eight-beat gangsa kotekan cell from Wahyu Giri Suara.](image_url)

I had closed my eyes and was trying to listen to my part in relation to the *sangsih* that was interweaving with me – leap-frogging over and under my own part – when, all of a sudden, I felt that I was playing more notes than I was. Dr. Tenzer had told us that, in *kotekan*, the *polos* and *sangsih* formed a composite melody, whose range and note density are

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6 The word “*ngempat*” literally means “to do four,” in reference to the interval of four tones, inclusive, which separate a note from its *kempyung*. The upper *kempyung* or *ngempat* of *ding*, for instance, is *dung*, and the four tones implied in the use of the word “*ngempat*” are *ding-dong-deng-dung*. While the *gangsa sangsih* line almost always play a *kempyung* above the *gangsa polos*, the *kempyung* below are acceptable “harmony” notes in the *reyong* parts, for instance. Some possible reasons for this phenomenon will be discussed in chapter three.
greater than those of any one component, but I had never really understood what that meant until the moment that, playing the *polos* of a eight-beat cell with my eyes closed, I felt that I was playing the whole of that melody. In my mind, I was not playing:

![Diagram](image1.png)

Figure 1.7. *Polos* line of gangsa kotekan cell from *Wahyu Giri Suara* (Fig.1.6).

but:

![Diagram](image2.png)

Figure 1.8. Composite melody of gangsa kotekan cell from *Wahyu Giri Suara* (Fig.1.6) as experienced aurally.

Not only did I hear it, I understood it and experienced it physically. I believe it was in that moment that I fell in love, finally, with *gamelan* music.

The *gangsa* interlock in a variety of different ways, depending, among other things, on the musical mood desired and the inclination of the composer. Each of these types of *kotekan* figuration follows its own particular set of constraints, though, in each case, the result is similar – a virtually uninterrupted composite melody typically moving at four subdivisions per *kempli* pulse. In Fig. 1.9, two of the most common elaboration types, *norot* and *ubit empat*, are transcribed for the same *pokok* line, again with the *polos* line stems down, and the *sangsih*, stems up.7

7 Structural elements of these and other *kotekan* styles will be elaborated upon as the need arises.
Until I played the kantilan, I had not really grasped the concept of polos and sangsib as being discrete parts that interlocked with one another. Because the four individual reyong players have such a limited range of notes, each controlling between three and five gongs (also called “pots” or “kettles”), depending on the position, it is rare for one of the four to play a complete polos or sangsib line. Instead, in interlocking reyong passages, each musician simply plays the notes of either line that fall into his/her respective range, fleshing the parts out with complementary kempyung tones or with rests.8

Studies of psychological processes and perception have proven that hearing, like other forms of learning, is a constructive process, and that repeated exposure to a piece of music, for instance, will engender an increase in the subtlety of our understanding and a widening of the area of our perception. In other words, as the research of psychologists and other specialists in cognition and perception, such as Niesser and Piaget has shown:

The learning process begins with spontaneous and immediate perception. Initial perception is limited because the cognitive framework for representing music is also limited. With growing experiences with music, perception moves from the immediate to the mediate. The initial percept becomes the emerging concept. As a person’s experience with music continues to expand, his or her cognitive framework also continues to develop and expand. Emerging concepts move into a network of interacting and interlocking relational concepts.9

My experience learning gamelan music clearly demonstrates these theories of human perception – I needed to be armed with a firm grasp on what my own instrument was doing, on how my polos part related to my neighbor’s sangsib part, before I turned my gaze farther afield, in an attempt to understand how these parts related to the rest of the gamelan.

8 The reyong is also known in the kebyar style for its byar, an eight note chord covering all the five scale tones of the gamelan and the full range of the reyong itself. These are played to emphasize important moments or, in a texture called oacak-oacakan, to form along with the kendang and an instrument of small mounted cymbals struck with hand-held cymbals known as cengceg, “an agogic layer of changing syncopations.” (Tenzer, 2000: 66.) While these fiery syncopated sections are a huge identifying factor of the gong style, they will not be explored deeply here.

The remaining metallophones, three pairs of instruments all with a one-octave or five-key range, are the penyacah, typically playing a melody line at a density of one note per kempli pulse (quarter-note), the calung, an octave lower and typically playing at half that density, and the jegogan, lowest melodic instruments of the gamelan, typically playing every four kempli pulses and lining up with the major gong strokes. Initially, I presumed that these instruments existed to give some textural variety to the ensemble, punctuating our fast-moving sections with complementary slow tones. I assumed that they were harmonizing or accompanying the faster parts. Because my first musical experiences had been as a singer and then a pianist, I seemed trained to think of music in this way, in terms of a melody – the voice or the right hand of the piano – and an accompaniment. It was not until I listened closely to the calung parts that I realized that they were often tracking my own line quite closely, not really harmonizing, but following, playing the important notes, perhaps. This, still, however, was an uneducated view, similar to the early scientists who believed that the sun and stars revolved around the earth because, from the perspective of earth, they appeared to be doing so. It was only upon speaking with Dr. Tenzer and reading the analytical accounts of McPhee, Ornstein, Vitale, and others, that I, like Copernicus, discovered that it was not the calung that were following me, but I who was elaborating upon the melody of the calung. This melody is known as pokok, and, I later discovered, is the core melody at the center of a Balinese melodic hierarchy. To truly understand this hierarchy, one must grasp the concept of Balinese heterophony.

"Heterophony" is a very broad term that encompasses a large array of melodic variation types found all over the world. These range from small rhythmic and melodic discrepancies or idiomatic ornamental freedoms in what would otherwise be two or more unison lines, to works of very complex contrapuntal music; the term implies simply any two or more simultaneous musical lines that vary, accidentally or deliberately, slightly or significantly, on what is recognized as the same melody. What is meant by Balinese heterophony is similar to the heterophony characteristic of the Javanese karawitan, as studied by Marc Perlman\textsuperscript{10} – music made up of different strata of musical material each with its own particular density, complexity, pitch content, musical function, and idiomatic playing style, yet each depending on another layer for its melodic integrity. As I have mentioned, at the

\textsuperscript{10} Perlman, 1993.
center of the Balinese gamelan's rhythmic and melodic hierarchy is the calung's pokok line, moving at a density of one note for every two kempli beats, a density which, from this point on, will be represented by half-notes. The jegogan, typically playing at half that density, fairly consistently sound every other calung tone. In the piece Ongkek-Ongkek Ongkir, for instance, the calung (or pokok) and jegogan lines are:

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{calung_jegogan_lines.png}
\caption{Calung (pokok) and jegogan lines for Ongkek-Ongkek Ongkir.}
\end{figure}

The stratum that is twice the density of the pokok and has a two-octave range is called the neliti. Almost invariably, the neliti line plays the same pitch classes as the pokok, filling in every other pulse with tones unique to its stratum. In Ongkek-Ongkek Ongkir, the pokok (calung) and neliti lines are:

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{neliti_lines.png}
\caption{Calung (pokok) and neliti lines for Ongkek-Ongkek Ongkir.}
\end{figure}

The neliti line may be played by the ugal or, compressed into one octave, by the penyacah, though it may only exist conceptually in the minds of the musicians. Solo instruments including the ugal, bamboo flutes called suling, two-stringed spike lutes known as rebab, and the reyong-shaped solo trompong, most of which are optional instruments in the kebyar style, each play an idiomatic variation on the pokok or neliti line known as payasan. Lastly, the gangsa and reyong lines that I egotistically thought to be at the center of the gamelan soundscape – because of the limited understanding and therefore insular
perspective that I had had of gamelan music in my first few months – are simply the fastest or most dense of the pokok elaboration strata.

At the end of my first full year playing gamelan music, I gained new insight into two additional instruments. For our spring concerts, the Balinese musician Madé Subandi joined our gamelan to play the second drum (kendang.) In the kendang pair, there is a higher and a lower drum (lanang and wadon, respectively), and, like the gangsa, they complement each other, playing their own idiomatic interlocking parts. Along with Subandi came two dancers, Nyoman Wenten and Kompiang Metri Davies, to dance, respectively, the traditional warrior dance, Baris, and the first half of Oleg Tumulilingan, a dance piece composed in the 1950s. Watching Wenten and Kompiang dance, I finally understood the purpose of the cengceng – a set of several small cymbals mounted on a wooden base and struck by two handheld cymbals. This instrument often seemed to rhythmically follow the reyong parts. While the reyong musicians were cycling their interlocking melodies, the cengceng played what, in Western notational practice, would be called straight sixteenth-notes, and it emphasized the reyong’s fiery, syncopated ocak-ocakan “chords” along with the kendang. The presence of the dancers fully explained the function of these sections.

The kendang players take visual cues from the dancers, playing certain rhythmic figurations to accompany specific dance movements, which often cue the ensemble into a new section of the music. The cengceng follows suit. Virtually every cengceng stroke in both Baris and Oleg – in all kebyar dance pieces, in fact – is accompanied by, or perhaps accompanying, a quick movement of the dancer – a leg lift, eye movement, or jerk of head or hands. The cengceng, therefore, exists to play steady subdivisions of the beat, which I later greatly appreciated while playing extremely fast reyong kotekan, and to emphasize the movements of the dancers, as well as simply to add another timbre to highly syncopated passages.

1.3 My Gamelan “Pilgrimage” to... San Francisco

After those spring concerts, I traveled for two months to San Francisco in order to play with Gamelan Sekar Jaya (GSJ) – one of the longest-running and most internationally-acclaimed gamelan in North America. For that time, I lived in the banjar or “gamelan

11 See footnote 8.
house” there, and took private lessons with Subandi, who was Sekar Jaya’s guest director. The trip offered more insight into aspects of gamelan music than I could have imagined.

I went to San Francisco to learn more about instrument playing techniques, and to surround myself with musicians more versed in gamelan music than the students in own ensemble. I achieved both of these goals – Subandi taught me better damping technique on the gangsa and reyong, and some of the musicians in Sekar Jaya helped me to relax the grip on my gangsa panggul in order to master the faster passages. I also learned a great deal from Subandi about the interlocking qualities of the reyong positions – how the penyorog (position 1) and ponggang (position 3) parts often double each other, as do the pengenter (position 2) and pemetit (position 4). This reflects the basic principle of octave equivalence, a very fundamental part of reyong grammar. The equivalence, however, is not constant; the low deng in the penyorog and the highest dang of the pemetit allow an expansion of the ranges of these outer parts in relation to their inner counterparts, thereby changing the contour of their elaborations, especially in norot style. The ponggang part attempting to double the penyorog, for instance, would be required to replace the latter’s low deng notes with rests or kempyung in its own part, as the deng is out of the ponggang’s range and may, indeed, be being played in that instant by the pengenter below it. While the penyorog is playing (e)/u-e-u-e-u-e-u-e/, the ponggang might play (a)/u-a-u-a-u-a-u-a/ for instance, the dang being the lower kempyung to the penyorog’s deng:

\[
\begin{align*}
\text{ponggang} & : \quad \text{solfege: (e) u e u e u e u e} \\
\text{penyorog} & : \quad \text{solfege: (a) u a u a u a u a}
\end{align*}
\]

Figure 1.12. Octave equivalence in penyorog and ponggang reyong positions.

Subandi also showed me how no two positions on the reyong interlock exclusively with one another, but how the pengenter (position 2), for instance, interlocks at times with the third position ponggang above and, at other times, with the first position penyorog below, depending on the ascending or descending direction of the pokok melody. The musical examples shown below to describe this last phenomenon are in the style of elaboration called
norot, which I will be examining in great depth in the chapters two, three, and four. For these examples, it suffices to know that norot is a kotekan style whose composite melody on the gangsa features regular alternation between the current pokok tone and the scale tone above it, and “consistently anticipates the [pokok] melody”\(^\text{12}\) by shifting from this pattern in the beat before a new pokok tone. For instance:

![Figure 1.13. Gangsa norot kotekan (o-o-i-a).](image)

While norot is more complex on the reyong, the same general principle applies. In Fig 1.14 below – a possible reyong figuration for a ding to dung pokok shift – the anticipation for the new pokok tone is found in the interlocking between the pengenter (position 2) and the ponggang (position 3); at the end of the second beat, the pengenter prepares the new pokok tone dung with a ding _dong-deng_ ascending progression, where (_ ) represents a rest in that part.

![Figure 1.14. Interlocking reyong norot #1 (i-u), pengenter and ponggang.](image)

\(^{12}\text{Ornstein, 1971: 236.}\)
In Fig 1.15 – figuration for a pokok line moving from ding to dang – the pengenter part begins in the same fashion, but changes at the end of the second beat in order to interlock with the penyorog (position 1), leading to the new pokok tone, dang with a ding _ dong-ding progression:

![Musical notation]

Figure 1.15. Interlocking reyong norot #2 (i-a), pengenter and penyorog

While with Sekar Jaya, I also expanded my personal picture of gamelan music, exploring genres and ideas outside the gong kebyar. In those two months, I learned about, heard, and tried my hand at several different genres of gamelan music, including the sweet ringing bronze of the four-keyed gamelan angklung, the deep, huge, haunting flutes of the gamelan gambuh, the dry rhythmic bamboo of the gamelan joged, and the incredibly difficult but refined gender wayang, metallophones played with a rounded wooden mallet in each hand and damped by fingertips and wrists. The most enriching part of my experience with Gamelan Sekar Jaya, however, was not a musical one.

For a month of my time in San Francisco, I lived in the GSJ banjar – modeled after the Balinese ward or hamlet, a civic social community formed to share some necessary tasks, including playing in the village gamelan, in a spirit of mutual help and cooperation. I lived there with Subandi, with the resident dance instructor Ketut Arini, both of whom had invited me to come to Bali and live in their homes within an hour of having met them, and with one other man who also played in the gamelan. The gong kebyar instruments were fifteen paces from my bedroom, with angklung and gender instruments in the living room.

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upstairs. Living in the *banjar*, I learned some very important things about the idea of Balinese community. The door was always open; people would come and go freely, taking lessons, using the phone, watching phenomenal videos of Balinese music and dance, or just visiting – always living, dancing, playing, eating, laughing and socializing in the same welcoming space. While my own first *gamelan* experience had been in a class setting, where students came to play and left immediately afterwards, this truly was a community. People would come early to rehearsal, often catching the end of some amazing Balinese feast that Arini had just cooked up, and a good portion of the musicians would stay after rehearsal, just hanging out – catching up on the week’s events, playing ping-pong with Subandi, and smoking *kretek*, the clove cigarettes smoked throughout the Indonesian archipelago.

Living in this environment, I could begin to formulate a sociological analysis of Balinese music: this communal aspect of Balinese living, reflected in the existence of a *banjar*, could be seen in the music of the *gong kebyar* as well. There is no one leader of the ensemble – four musicians share the task, and no one part is complete by itself – *polos* and *sangsih* complement each other, each metallophone needs its tuned pair for the proper timbre, and every stratum relies on another for its melodic validity. Even the solo instruments such as the *ugal* and *suling* have individual freedom only to a point, depending on the *pokok* line for a basic frame of reference. While this does not prove, as Clifford Geertz suggested in his studies of Balinese conceptions of time and personhood,\(^{14}\) that community and tradition are so wholly sacrosanct in Bali that the individual is nothing more than a meaningless part of a larger, never-changing picture, it does suggest a manner of thinking perhaps more communally oriented than that of the generally independent, egotistical, capitalist, self-centered, atheistic society that I grew up in. Certainly I have witnessed first-hand the incredible individuality and independent contributions of such Balinese people as Ketut Arini with her youthful energy, her personalized motherly affection, and her innovative methods of teaching dance,\(^{15}\) and Madé Subandi with his easy laughter over an evening tea and English/Indonesian lesson and his progressive contemporary compositions. And, while these people seem to be a living negation of Geertz’s theories, I also will concede that the importance of community, of looking out for everyone, in that

\(^{14}\) As in Geertz, 1973

\(^{15}\) Arini was compiling a book of Balinese dance instructions, complete with recordings of her singing instructions to the underlying melody of the piece, as in “gong 1 2 3 shake shoulders...”
environment was all-encompassing, and it may truly be reflected in the music, when compared to a Western orchestra filled with would-be soloists and headed by one often authoritarian conductor. Regardless of the blatant oversimplification in that last statement, there is certainly some truth to the dichotomy presented, and this, more than anything else, is what I learned about Balinese music while I was in San Francisco. My most intense gamelan experience, however, the one that would lead me to this research, was yet to come.

1.4 The Beginnings of my Research

By the beginning of my second year in the UBC gamelan, I had a firm grasp on the most elemental aspects of gong kebyar music. I understood that it was a cyclic or “colotomic” style of music, and that its texture was heterophonic, with the pokok melody played by the calung in the center of the melodic hierarchy, the colotomic gongs at the least dense stratum, and, at the fastest and most dense, the elaborating parts of the interlocking kendang, and the gangs and reyong, which also often interlocked in a style of elaboration known as kotekan. But many new and deeper insights into the music awaited. That year, our gamelan was directed by the well-known Balinese musician and composer, Dewa Ketut Alit. Alit had grown up in Bali, and been exposed to gamelan music daily since his infancy, and this gave him a deep, instinctive knowledge of the tradition. Alit told me some wonderful stories about lying in his father's lap as a young boy while his father played the kendang. He would listen and watch, holding onto his father's hands and feeling the rhythms that he played, or laughing with the rest as the ugal player kicked the sleeping kempli player after a long rhythmically free section. The music making would often go on well into the night, and young Alit would fall asleep in his father's arms, surrounded by the sounds of the gamelan gong kebyar. Growing up in his village of Pengosekan, Alit and the other children were allowed free reign to play with the gamelan instruments, imitating what they saw the older men do, as young boys have done for generations in Bali. His complete indoctrination into the musical tradition offered me the insider insight that I needed to begin my research.

The inspiration for my research came on the first day that I sat down at the reyong and waited for Alit to begin teaching Cecenangan, the new piece that he was composing for

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16 These stories are from interviews, lessons, and casual conversations with Dewa Ketut Alit, Sept., 2001-April, 2002.
our *gamelan*. *Gamelan* music is not improvisatory in nature. Once the composer has written a *pokok* melody, s/he chooses the style of elaboration that s/he wishes the *gangsa* to play, for instance, and the musicians play it. For example, there is only one way to play *norot* figuration on the *gangsa*, for any given melody. This was something that I knew. I also assumed the same to be true of the *reyong* interlocking parts, until I watched, frustrated, as Alit tried to show me ten slightly different variations of a given cycle before finally settling on one. In the subsequent rehearsals, he would always forget the figuration that he had decided upon, or continually change his mind from week to week, a habit that did not help in the learn-forget-learn-forget pattern that I had developed. Aside from being slightly exasperating for a musician used to learning from the written page, this indecision piqued my curiosity. As *reyong* players, my three counterparts and I were also told that we had the freedom to “improvise” on what we’d learned – surprising, considering the non-improvisatory, pre-composed nature of *gamelan* music – but generally got pained looks for trying. When we asked what we could and could not do while “improvising,” our questions were met with uncertainty; Alit simply knew what felt right and what didn’t, but he could not explain it to us... it came from the “feeling” developed in his Balinese musical upbringing.

The combination of these three observations – the indecision, the pained looks, and the Balinese “feeling” – meant three things to me. One: there was a certain amount of freedom allowed the *reyong* players in their *norot* elaborations, two: this freedom was not without its boundaries, and three: though Alit obviously knew what the boundaries were, he was unable to express them verbally. Frustrated by what I did not understand, but armed with these new realizations, and curious to know more than any of the existing writings on *gamelan* music could tell me on the topic, I decided to make it my mission to discover all that I could about both the freedom and the boundaries; to create, as a linguist might with the inflections and syntax of a language, a set of rules – a grammar – that I could use for realizing *reyong norot* figuration. I knew that every spoken language is remarkably varied in its use, but that many linguists attempt to “demonstrate that each language is at its core, as it were, a homogeneous entity, and that it is possible to write a complete grammar for a language which makes use of *categorical rules*, i.e., rules which specify exactly what is – and therefore what is not – possible in the language.”

17 Wardhaugh, 1998: 5.
speakers of a given language know its limits or norms, its grammatical rules, and that “that knowledge is both very precise and at the same time almost entirely unconscious.”\footnote{Ibid., 6.} I was hoping that a musical language might be decoded in a similar fashion.

Some ethnomusicologists, such as Benjamin Brinner, have discussed a person’s musical competence in fulfilling the roles of both performer and teacher in terms of their various ways of “knowing things,” be they active or passive, explicit or intuitive. As a young boy on his father’s knee, Alit had gained passive insight into 	extit{gamelan} music – he was able to “understand and respond to”\footnote{Brinner, 1995: 35.} the music that he heard, though he was not yet capable of producing it. As he began to play the instruments with more experienced musicians, he gained active knowledge: the ability to access his understanding of the music and thereby perform it. This active knowledge, firmly rooted in his early passive-knowledge acquisition, enables Alit to know what to play in a traditional 	extit{gamelan} piece on any instrument at any given time – to “hear other parts, and orient, derive, or confirm [his] own part in relation to the ensemble.”\footnote{Ibid., 149.} Yet, as Brinner states, this “learning through performance” causes musicians such as Alit to have an “intuitive rather than explicit knowledge”\footnote{Ibid., 146.} of their musical traditions – they are able to play the music very competently, but are not “aware of the internal organization of [it, nor are they...] capable of expressing that knowledge”\footnote{Ibid. 36.} verbally. In working with Alit, therefore, I hoped to put his tacit knowledge into words that were relevant and helpful for me as a musician, so that I could learn, explicitly and actively, what I did not know intuitively or passively.

The bulk of my research was completely hands-on. I met with Alit for several hours a week over the course of four months in the winter and spring of 2002, to play and talk about 	extit{gamelan} music. At that time, Alit had been teaching our 	extit{gamelan} for a number of months, and I had explained to him my desire to understand more fully the way that he played and taught reyong norot elaborations. Each time we met, he would teach me a payasan (idiomatic melodic elaboration) to play on the ugal, sometimes a well-established piece in the kebyar repertoire, other times, a new composition of his own, composed while I watched. Next, he would show me the penyacah, calung, and jegogan parts that went with
the new melody. I then asked him, while I cycled the ugal part, to sit in turn at each of the four positions on the reyong and play norot. I asked him to play as many times as he wanted, at various speeds, and to play both the way that he taught norot to beginners like us, and the way that he would play it himself in Bali, with a partner that he knew well – techniques which we later called “easy” and “hard.” I made this distinction because of something Alit had told me in one of our first meetings: “sometimes [it’s] dependent on how I feel [...] because when I play it’s different than when I teach[...] When I play, I feel... I’m free. This I’m playing now [...] is from my feel [sic], because I am Balinese.”

He would then teach me one variation of the first position penyorog, and while I cycled it, he would play the second position pengenter above me, to show how the two interlocked and to explain when the pengenter connected with the third position ponggang instead. Each of these sessions I recorded, and later transcribed in full, both the music and the dialogue. In total, I recorded, transcribed, and analyzed over 700 variations on the four reyong positions for five different pieces of music. The melodies discussed in the following analyses are sections from three well-known gamelan works: Oleg Tumulilingan (abbreviated Oleg), Kebyar Jaya Semara (KJS), and Ongkek-Ongkek Ongkir, and two new works, entitled New Composition, Lelambatan Style (abbreviated as simply New Composition) and New Melody. Because most of the analyses will be discussing only small segments of a given melody at any one time, each of these pokok melodies, along with the corresponding ugal payasan, neliti (either the one-octave penyacah melody or the full two-octave neliti line), and jegogan parts, is transcribed below in full:

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23 Interview with Dewa Ketut Alit, January, 2002.
1: Oleg Tumulilingan - ugal payasan

solfege: (U) U U A I o I I A o I A U U e e o o A A U

penyacah (1 octave neliti)

solfege: (u) a u o i o i a u o e i o i a e u

* note: The dang on beat 2 of Oleg Tumulilingan's pokok is a variation that Alit played on what is commonly understood to be a dung. The melody, therefore, is generally (u)-u-i-a-u-e-o-a-u, though Alit plays it as (u)-a-i-a-u-e-o-a-u.

2: Kebyar Jaya Semara - ugal payasan

solfege: (O) O I I A A e e o o I I A A e e o

penyacah (1 octave neliti)

solfege: (o) a i u a o e i o a i u a o e i o

pokok (calung)

solfege: (o) i a c o i a e o

jegogan

solfege: (O) A O A O
3: Ongkek-Ongkek Ongkir - ugal payasan

solfege: (I) o e u e o l o e a u e o o e u e o l o e a u e o A o l A e U A I A o l A e U A I

2 octave neliti line

solfege: (I) o e o l o e l o e o l o e l o A o l A e U A I A o l A I U A I

pokok (calung)

solfege: (i) e i e o c i e o o a u i o a u i

jegogan

solfege: (I) I O I O A I A I

4: New Composition (Lelambatan Style) - ugal payasan

solfege: (E) EE E_E_E_E_EA A_A_A_A_A_A_AE EEE E_E_E EAA_A_A_AI I I I I ee

2 octave neliti line

solfege: (E)UEU AI AE EU EU AIA lo e u e u e u a i a u e u e u a i a u e o l A U A E U A U E

pokok (calung)

solfege: (e) e a a e e a i e e a a e e a a e i u a e

jegogan

solfege: (E) A E A E A E A E U E
While there are certainly imperfections in this laboratory approach to music – in asking a Balinese musician to attempt to play one portion of a four-person instrument that would never otherwise be played in isolation – it was both necessary and, I believe, successful. And, as Simha Arom has said of his own research on African polyphony and polyrhythm, “insofar as a polyphonic piece is based on a coherent structuring of all its parts, each of these parts must be coherent in itself. If this is true, each part should be playable separately, i.e., have its own individual existence in sound, just as it exists in the mind of the person who performs it.”

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Figure 1.16. *Pokok* melodies with *ugal payasan*, *neliti*, and *jegogan* lines: #1 (Oleg Tumulilingan), #2 (Kebyar Jaya Semara), #3 (Ongkek-Ongkek Ongkir), #4 (New Composition, Lelambatan Style), and #5 (New Melody).
CHAPTER II: Norot

2.1 General Features

As I briefly mentioned in the previous section, norot, also called nyok cok, is a style of elaboration, used by both gangs and reyong players, which produces, on the gangs at any rate, a fairly simple composite melody. The Balinese consider this type of figuration to be manis, or "sweet." Thus, while norot may be used, in theory, for every style of music, Balinese "feeling" dictates some limitations to its use in the kebyar style. According to Dewa Ketut Alit, norot is most frequently used in kreasi lelambatan melodies, or similar works modeled after the slower classical styles of other gamelan repertoires. It is less often used for elaboration of, for example, a fast melody with a gilak gong pattern, as in the dance pieces Baris or Topeng. These, Alit explains, are better served with another style of elaboration, such as ubit-ubitan. He considers norot to be "romantic, sweet," not "very strong," and certainly "not good for a big man walking or a big demon." “Norot gives a different feeling for the dance from [sic] ubit-ubitan. The dancer [for Baris] would think norot is not good spirit, not good feeling,” but for a lelambatan-style piece, norot is perfect.

Norot elaboration has a very identifiable shape, characterized by a "wavering or neighbor-note motion around each pokok tone." As previously mentioned, the composite melody in strict norot, which I notate as sixteenth-notes, alternates back and forth between the current pokok tone and the scale tone one above it, at a rate of four notes for every kempi stroke. It alters from this pattern only to prepare for a new pokok tone, with a three-note anticipation. This norot pattern may be divided into polos and sangsih in either interlocking (kotekan) or non-interlocking figuration. Generally a slow-moving melody will be elaborated with non-interlocking parts. In these cases, the full pattern is played by the polos with the sangsih tracking its contour at the interval of a kempyung (three scale tones) above, and falling into unison with the polos when instrument range limitations dictate. Fig. 2.1 shows the non-interlocking gangs norot figuration for a o-o-i-a pokok line:

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26 Interview with Dewa Ketut Alit, April 2002.
27 Vitale, 1990: 5.
28 The sangsih may at times fall two scale tones below the polos line, which is, in fact, an octave displacement of the kempyung above. It is also known as a "nelu", meaning "three" just as ngempat means four. This will not be explored here.
non-interlocking
gangsa
norot

solfege: (a) i a i a i a i a i a i a a u u a u a u a u e c u e
(o) e o e o e o e o e o e o l o l o l o l A A I A

Figure 2.1. Non-interlocking gangsa norot #1 (o-o-i-a).

This kind of melodic elaboration, based on simple alternation between the pokok tone and the adjacent tone above it, probably predated kotekan techniques. Kotekan may well have evolved out of the desire to play this figuration at faster and faster tempos, until a single player could no longer execute all of the notes. In interlocking gangsa norot, the polos plays all the current pokok tones, thus coinciding with the kempli beats (notated as the first sixteenth-note subdivision of the beat), as well as the third subdivisions (the “and” of the beat), while the sangsih players take care of the scalar upper-neighbor tones that fall in between (on the second and fourth subdivisions.) The two components share the three-note anticipation of each new pokok tone in a neatly prescribed fashion that, in essence, has each component playing the exact same rhythm, but offset by one sixteenth-note. Using the same pokok melody as in Fig. 2.1, the gangsa norot kotekan, playing only the notes of the non-interlocking gangsa polos line, would be realized:

gangsa
norot
kotekan

solfege: (o) e o e o e o e o e o e o e o l o l o l o l A A I A

Figure 2.2. Gangsa norot kotekan #1 (o-o-i-a, as in Fig. 1.12).

Before analyzing the above figuration, it is important to reiterate that the strong part of the beat in Balinese gamelan music, the neliti tone, comes at the end, not at the beginning.

29 Vitale1990: 6. Italics are mine.
of the beat. Each of the cells analyzed, therefore, is actually considered to begin on the second sixteenth-note of a beat, just after the first pokok tone, and to end two full beats later, on the first sixteenth-note of the beat coinciding with the new pokok tone. When analyzing these cells with their solfege names, then, the neliti tones (each new quarter note) are boldfaced, and each beat is separated by a backslash (/) for easier legibility. A double backslash (//) separates each two-beat cell, being placed just after every pokok tone. The first pokok tone, which actually belongs to the previous cell, will often, though not always, be shown boldfaced in parentheses just before a double backslash, to clarify any misunderstandings as to where the down-beat lies. The elaboration in Fig. 2.2, with tones in the lower octave of the instrument notated in upper case letters, as explained in Chapter I, footnote 3, is written (o)\//e-o-e-o/e-o-e-o/I-I-o-I//o-I-o-I/A-A-I-A//.

"Since a rigid melodic formula is characteristic of njok tjok figuration," it can be realized, on the gangsa, in only one manner for the two-beat cell between any two specific pokok tones, and this model closely and visibly adheres to the pokok line. For example, a ding to dang shift is always played, as in Figs. 2.1 and 2.2 above, as (i)//i-o-i-i-a-i-a//. Therefore, once a gangsa musician understands the model for a two-beat norot cell, s/he may realize any melody without the aid of a teacher, by simply following the outline of the pokok melody. This gangsa norot model follows two separate but very basic contour types, both of which may be observed in Figs. 2.1 and 2.2. Deciding which contour type to use for any given two-beat cell will depend on the kinetic quality of the pokok line.

There are two possible kinetic qualities for a pokok melody. The simpler of the two is the ngubeng or static quality. This occurs when two successive pokok tones are the same pitch. In such cases, the gangsa norot will always alternate regularly between the pokok tone and its scalar upper neighbor, with no three-note anticipation required. The dong to dong cell beginning the example in Fig. 2.1 and 2.2 may be seen to faithfully follow this model with its (o)\//e-o-e-o/e-o-e-o// contour.

The other possible melodic quality for pokok motion is known as majalan, meaning kinetic or moving. This occurs in any two-beat cell between differing pokok tones, as in a shift from dang to deng, for instance. The first four notes of any majalan gangsa norot

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30 Ornstein, 1971: 235. "Njok tjok" is simply the pre-1972 Bahasa Indonesia spelling of "nyok cok."
31 The concept of ngubeng was introduced to me in an interview with Dewa Ketut Alit, April 2002. An elaboration on his introduction, and the concept of its antonym, majalan, was found in Tenzer, 2000: 178-80.
depend on the first pokok tone for their integrity, alternating between that tone and the one above it. The gangsanorot, for a melody moving from dang to deng, would begin (a)/i-a-i-al/. The last four notes in any majalan gangsanorot – the preparation of the new pokok tone – regardless of the first pokok tone, are always the second pokok tone played twice, its scalar upper neighbor played once, and the new pokok tone played again as the calung are sounding it. In the same dang to deng example, then, the second half of the gangsanorot figuration would be /e-e-u-e/. In a non-interlocking norot, the sangsih, again, would play the kempyung above, complementing (A)/I-A-I-A/E-E-U-E/ with (e)/u-e-u-e/i-i-o-i/:

![Non-interlocking gangsanorot figuration](image)

Figure 2.3. Non-interlocking gangsanorot #2 (a-e).

In an interlocking figuration of the same pokok shift, again with an underscore (_), representing the sixteenth-note rests, the polos would play (A)/_A_ _A/E-E_/ while the sangsih interlocked with (_)/i_i_/c-e-u_/:

![Gangsa norot kotekan figuration](image)

Figure 2.4. Gangsa norot kotekan #2 (a-e).

While gangsanorot figuration consistently follows these tight constraints and is therefore fairly simple to master, norot is anything but straightforward on the reyong. As previously mentioned, the limited ranges of each of the four reyong musicians require the use of rests and kempyung, both above and below, in combination with the basic norot figuration.
contours so closely adhered to by the *gangsa norot kotekan*. In addition, while the *reyong norot* seem to contain, within the limited ranges of each player, the same general pitch make-up as the *gangsa norot*, it may not truthfully be said to follow a fixed pattern of elaboration. As with the solo instruments that vary idiomatically on the pokok line, *reyong* parts are also allowed a certain measure of "improvisational" freedom that leads to seemingly infinite variations of *norot* elaborations. It is these that I seek to analyze here – to find the pattern in the almost endless possibilities, the inherent guidelines that seem to exist and to decide for a Balinese musician which *reyong norot* realizations are acceptable and which are not. The following analysis, then, is a humble attempt to make sense, for a Western musician not fully versed in the unspoken musical theory of Bali, of the hundreds of *reyong norot* variations that I have recorded or been taught.

### 2.2 Specific Characteristics of Reyong Norot

While much of this analysis takes place at the cellular level – analyzing, as above, the two-beat units of sound played, at each of the four *reyong* positions, between any two given pokok tones – it is useless without an understanding of the whole picture of *reyong norot*. As Simha Arom poignantly states, "[l]es divers éléments [...] une fois dissociés, peuvent perdre leur sens et jusqu'à leur identité. Il apparaît donc nécessaire d'avoir constamment sous les yeux une *image globale* du document sonore destiné à l'étude." 32 Watching four musicians playing *norot* on the *reyong* is an exhilarating aural and visual experience. Each of the four musicians is, at some points, playing an independent line, and, at other moments, interlocking with either the musician above or below him/her. In the cases of the outer two parts, the penyorog (position 1) and the pemetit (position 4), the musician may also be said to be interlocking at times with an imaginary musician playing beside him/her, just outside the range of the *reyong* itself. 33 Because of this constant shifting of small interlocking units across the instrument, there is an impression of a vast amount of free and interconnected lines weaving in and out of each other in a complex explosion of continuous motion, perhaps both more intricate and less simply elegant than a *gangsa norot* figuration. Watching a flurry of

32 Arom, 1969: 172. Translation: Once the diverse elements have been disassociated the one from the others, they may lose their meaning and even their identity. It seems necessary, therefore, to always have at hand a *global image* of the aural document being analyzed.

33 Interview with Dewa Ketut Alit, February, 2002.
eight panggul racing together over the twelve gong kettles of the reyong, each almost constantly in motion – either playing or damping – each contributing to mere pieces of one of several simultaneously occurring lines, is overwhelming. A careful eye will catch a small three-note ascending passage being shared seamlessly between two musicians, or an alternation between two adjacent notes divided by two musicians into polos and sangsih, as the gangsa would divide it. And, always, the kempyung are used, an ever-present enrichment of the music’s “harmonic” pitch make-up.

Perhaps the simplest way to describe the experience in words is through a summary glance at some of the features in a specific reyong norot passage. The following musical example is made up of the four norot realizations that Alit played, at the end of my first lesson with him, for Oleg Tumulilingan. Because norot figuration on the reyong varies so significantly, not all of Alit’s realizations of the pemetit (position 4) part, for example, can be used with each of his ponggang (position 3) realizations. When playing the ponggang part, for instance, he would sometimes use only dung and dang, while, at other times, moving up to the ding above, presuming that the imaginary pemetit player above him would move to his/her higher pots as well. This was one disadvantage of the laboratory research setting that I created so far from Bali – I had only one musician fully versed in the tradition that I was learning, a tradition that in fact requires four musicians who understand each other’s playing styles and feeling. To compensate for the lack of other Balinese musicians, I had to ask some very detailed questions in order to fully understand specific interlocking techniques.

Therefore, the realizations that I have chosen here, for each of the four reyong positions, were created with the question “given the penyorog (position 1) part that you have taught me, what is one possible way to play the other three parts?”

The first general point to be made regarding the transcription in Fig. 2.5 below is that, other than the first subdivisions of two weak calung tones – those, at beats 6 and 14, that are not supported by the jegogan below them – the motion of the reyong is constant, with at least one of the four musicians sounding a tone on each subdivision of every beat. It may also be seen that the ponggang (position 3) does quite often double the penyorog (position 1), except when the latter is playing or preparing to play its low deng, and that, aside from the fourth

34 Because of the reyong parts chosen for this particular realization, I have elected to notate the second pokok tone as dung, the Balinese standard for the piece, not dang, the tone that Alit taught to me. There are several reasons for this which will become clearer in the analyses in chapter four.
Figure 2.5. Complete reyong norot kotekan for Oleg Tumulilingan, with pokok melody.
position pemetit’s high dung, which “is often used judiciously in what might otherwise be inhospitable tonal situations as a way to boost the prominence of the reyong in the texture and add extra cross-rhythmic vitality,” it often closely doubles the second position pengenter line. An example of this cross-rhythmic use of the high dung may be seen in the pemetit’s subdivision directly following the first calung tone. By sounding in a subdivision that coincides with a gangsas note dang, and thereby occurring simultaneously with the pengenter kempyung, deng, the dung finds itself in one such “inhospitable tonal situation.” This occurs again in the subdivision directly following the sounding of the pokok tone dung on beat eight.

A handful of more specific observations on this transcription will clarify much on the topic of reyong norot. For analytical ease, we will begin with the ding to dang shift between beats 4 and 6, a cell in which the third position ponggang, playing only kempyung notes, perfectly doubles the first position penroyog line, and the fourth position pemetit, playing only the gangsas polos norot tones, doubles the second position pengenter, thus forming two pairs playing at octave unisons. For this i-a pokok shift, the gangsas would begin with (i)//o-i-o-i/. In a slower non-interlocking realization, the sangsih would play the kempyung, (u)//a-u-a-u/. In each of the four reyong parts in the above example, Alit plays some, but not all of the notes in this cell, both the original pitches and the kempyung above. He might have played every note in each position, but, for reasons of both variety and ease of playing and damping notes at a fast tempo, he did not. The result is that each pair of parts makes a composite melody that is not the same melody as the gangsas composite. While at times, both the original tone and its kempyung are sounded together, rests in one part make it feel as though each separate line has temporarily fallen into unison with its neighboring part. One might hear the composite melody, therefore, as (i)//o-i-a-i/, concentrating on the fourth position pemetit and second position pengenter parts but hearing their partners’ dang in their rests. The complementary kempyung melody would contain the ding from its upper neighbors during its own rests: (i)//a-u-a-i/. In each of the cells notated in Fig. 2.6 below, one of these composite melodies is circled for visual clarity:

In other segments from Fig. 2.5, the doubling of parts and dividing up of *kempyung* and *gangsa polos* notes is not so straightforward. In the two beats between the gong tone *dung* (beat 16) and the *dung* on beat 2, the *pengenter* (position 2) is playing entirely *kempyung* notes and the *ponggang* (position 3), entirely *gangsa polos* notes. The *penyorog* (position 1) and *pemetit* (position 4) in this case play almost identical lines, partially doubling the *ponggang* line. However, instead of playing the *gangsa polos* tone *dang* they dip down to the *kempyung* tone *deng*. In the case of the *pemetit*, this is because of the instrument’s range constraints. This range limitation is further exhibited in the following two beat cell when the *penyorog* does go up to the *gangsa norot* tone *dang*, forcing the *pemetit* to play its own independent line or, as it does, to fall down to the *kempyung* line, doubling the *pengenter* with (u)//o-i-o_. The *penyorog* in that first beat, however, falls to the *deng* by choice, not necessity, perhaps implying an interlocking with an imaginary *kempyung* player below him, playing the low *dong* just outside the range of the instrument.

Probably the most interesting moments in this and any *reyong norot kotekan* are the second halves of each two-beat cell – the anticipations of new *pokok* tones. It is in these fragments that one can best observe the interlocking quality of the *reyong* parts. In the second half of the *deng* to *dong* shift in beats 10-12, for instance, the *penyorog* (position 1) interlocks with the *pengenter* (position 2), the former’s (u)/u-a-i_/ progression in subdivisions 5-7 leading to the latter’s *dong* on subdivision eight. Likewise, the *ponggang* (position 3)’s (u)/_a-i_/ progression leads to the *dong* in the *pemetit* (position 4) part.

Similarly, the *dang* to *dung* shift in beats 6-8 may be seen in the *pengenter*’s /o-o-e_/ progression leading, in its rest, to the *ponggang*’s *dung*. There are many other examples in which the interlocking is not so obvious. This may be because the parts at any particular point are not interlocking but playing *kempyung* or octave unisons with their partners, because some of the notes in these patterns may have been replaced, in similar situations, by rests or *kempyung*, or because, in certain cases which will be explained at the
cellular level in Chapter four, the reyong parts do not faithfully follow the contour of the corresponding gangsa norot lines. These few examples, however, do give a sense of what is entailed in reyong norot kotekan.

One last observation that may be made from this example, before moving onto a more microscopic examination of norot figuration at the cellular level, is that, while Alit employs a wide array of rhythmic motifs throughout the passage, there are certain rhythmic events that never occur. He never rests for more than one consecutive subdivision at any one position, and he never plays all four notes in any one-beat cell in any one position. In examining the pemetit part in beats 1-3, one does observe six consecutive notes being sounded. However, no four of these notes occur on the same beat – in beats 1-2, Alit plays a /_ u-e-\u// progression, while, in beats 2-3, he plays //o-i-o _/. The probable reasons for this phenomenon are explained above: on the one hand, it is difficult to play every sixteenth-note subdivision at a fast pace, and, on the other hand, this insertion of rests increases the aural perception of interlocking between the various positions, as observed in the above example in which Alit seemingly randomly reduces an entirely feasible (i)//o-i-o-i/ passage in the pengenter and pemetit into (i)//o-i _ i/ and the corresponding (u)//a-u-a-u/ passage into (_)//a-u-a _/. While these decisions are based largely on the feeling of the musician playing them that day, and are not consistently abided by – Alit does at times sound all eight subdivisions in a two-beat cell at one position on the reyong, as will be seen – they are still worthy of note.

2.3 Preliminary Notes on Analysis

Now that we have explored reyong norot at the macroscopic level, investigating general concepts of gangsa norot contour, kempyung tones, and interlocking parts, as they relate to this particular style of kotekan, we will move to the most technical and detailed sections of the analysis. What follows is an in-depth look at the behavior of each separate reyong position in the two-beat, eight-note cells between any two pokok tones. Through this microscopic view, we will achieve understanding of both the freedom and the limitations observed in Alit’s reyong norot figuration.

First, I must clarify two points. This thesis does not purport to offer a complete list or explanation of all the possibilities of reyong norot figuration – they are most likely infinite –
nor do I wish to imply that any of the analytical categories that I create are understood, consciously or otherwise, by the Balinese themselves. I was aided in my research by one Balinese musician only, and by the very thorough studies of a few academics who also tread a fine line between the spoken Balinese musical theory – for there is some, touching on aspects of scale, structures, and instrument relationships – and an approximation, offered by one Western observer, of an explanation for what is left unsaid. Many of the theoretical questions that I had, Alit could not answer. When I asked “why do you play it this way?,” “why can I not play this?,” or “how do these parts interconnect?,” for instance, he would reply, “I don’t know how to explain to you, because it’s from my feeling, and sometimes I change again.” If I spoke to him about the templates and categories I will be discussing in the following pages, he would probably laugh at me, and then wait twenty or thirty years for me to develop my own “feeling.” But, while passive knowledge is enough for a Balinese musician who has grown up inside this musical tradition, it will probably never be enough for me without some conscious analysis. Therefore, I use my Western musical training, combined with my knowledge of the Balinese music that I have played, and the work of other ethnomusicologists, to create the words and tools with which to describe the patterns that I discover in this music in a credible way. In a sense, I am creating, through observation, analysis, and pattern recognition, a system through which other Westerners may play and write in this style of music whose rules are inherent. While many scholars, including McPhee, Ornstein, Vitale, and Tenzer, have offered explanations for various theoretical aspects of Balinese music, none of the existing literature has undertaken a study this focused, and it is my hope that this original contribution will enrich the ethnomusicological dialogue on Balinese music. In Tenzer’s words:

my most valuable contribution can be to augment the range of discourse about Balinese music by including some ideas that are not necessarily implicit in what I have learned from my Balinese teachers. Some of the concepts that I advance would be unlikely to emanate from the primary bearers of the tradition, though I have relied on my teachers for guidance and feedback. As an experienced participant in this music, I have imagined it as if it were my own (which, for my purposes, it surely is), thinking creatively 'in' as well as about it, and offering the conclusions that result when they seem potentially enriching.

In the analyses that follow, I use the numbers 0 through 4 to represent the five tones of the pelog scale in something of a moveable 'doh' system. An explanation is required here.

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36 Interview with Dewa Ketut Alit, March, 2002.
37 Tenzer, 2000: 5.
As mentioned, virtually all analysis will be at the cellular level – an analysis of the two beats, the eight sixteenth-notes, between two successive pokok tones. In every case, the second of the two pokok tones, regardless of its pitch, is labeled 0. This is because a Balinese musician always considers the music at a given moment not to be generated by the current pokok tone, but to be leading to the next. All other tones are labeled 1, 2, 3, or 4, in relation to the pokok tone 0, and without reference to octave placement. Because of the basic principle of octave equivalence explored in chapter one – due, in part, to the limited ranges of each reyong musician – a dang in the lower octave is functionally equivalent to a dang in the upper octave; octave placement is, therefore, of little importance in an analysis of this kind, because the reyong player will always compress the two octave gangsa patterns into one octave, playing the same patterns whether the neliti line is high or low in its range. The note directly above the pokok tone 0, therefore, is labeled 1; the note one scale-tone below the pokok tone 0 is called not −1, but 4, since it is the same pitch class as the note four scale-tones above the pokok tone 0. For instance, a melody moving from dong to deng is called 4-0. Moving from deng to dong, it is labeled 1-0. This is further clarified in Fig 2.7:

<table>
<thead>
<tr>
<th>Second pokok tone (0)</th>
<th>Tone 1</th>
<th>Tone 2</th>
<th>Tone 3</th>
<th>Tone 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ding</td>
<td>dong</td>
<td>deng</td>
<td>dung</td>
<td>dang</td>
</tr>
<tr>
<td>dong</td>
<td>deng</td>
<td>dung</td>
<td>dang</td>
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<tr>
<td>dung</td>
<td>dang</td>
<td>ding</td>
<td>dong</td>
<td>deng</td>
</tr>
<tr>
<td>dang</td>
<td>ding</td>
<td>dong</td>
<td>deng</td>
<td>dung</td>
</tr>
</tbody>
</table>

Figure 2.7. Numerical labeling system for tones in relation to pokok tone 0.

This system simplifies analysis by allowing us to look for patterns based on the number of scale tones traveled as opposed to the actual pitches used. A look at the two gangsa norot figurations notated below will help to explain why this is a desirable reduction of the music:

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38 Interview with Dewa Ketut Alit, January, 2002.
39 This concept of octave equivalence in the reyong also adds other interesting dimensions to the music, particularly its contour, which will not be deeply explored here. For instance, when the neliti or gangsas lines demonstrate a clear ascending or descending contour, the reyong players, due to their limited ranges, cannot directly trace this contour. Instead, their tracking of the neliti line is quite different from the gangsas’s tracking – it demonstrates a circular character, neither ascending nor descending, and thus seems to be moving in parallel motion with the gangsas at times, but, at other times, in contrary and oblique motion.
In the first example, each two beat cell is a 1-0 pokok shift, because the second scale tone is one scale step below the first. It may be observed that, regardless of the pitches used, the actual norot model, a (1)//2-1-2-1/0-0-1-0// contour, is adhered to both times. Similarly, the two shifts in the second musical example are both 2-0 pokok moves, and the two eight-note gangsa cells corresponding to those pokok shifts, regardless of their pitch make-up, follow a (2)//3-2-3-2/0-0-1-0// model. The same would be true of any two pokok shifts traveling an identical number of scale tones. Each ngubeng (0-0) melody, regardless of its pitch, is always realized by gangsa norot as (0)//1-0-1-0/1-0-1-0// – a dang to dung shift is realized as (u)//a-u-a-u/a-u-a-ul/, a dung to deng shift, as (e)//u-e-u-e/u-e-u-e//, and so on.

Because of the “movability” of these norot contours, it is sensible in searching for possible patterns in norot figuration to compare not just every possible shift from deng to dong with one another, but every possible 1-0 shift, encompassing not only the deng to dong shifts, but the dong to ding shifts, the ding to dang shifts, and so on. This is even more important in analyzing reyong figuration because a //e-o-e-o/i-o-i// or //2-1-2-1/0-0-1-0// realization of a deng to dong shift, for instance, is only possible for a pemetit (position 4) or pengenter (position 2) player. In order to compare and find similarities between their 1-0 shift norot patterns and those of the ponggang (position 3) and penyorog (position 1), this
more all-encompassing system must be used. In numbering all of my transcriptions in this way, I was able to numerically compare the contour of any two cells with the same range of pokok motion. I could easily assess contour similarities, for instance, between Alit’s pengenter realizations of a deng to dang (3-0) pokok shift in his New Composition, and penyorog patterns that he had played two months earlier in a ding to deng (also 3-0) shift in Ongkek-Ongkek Ongkir. It helped to reduce an immense amount of information into a manageable and relevant format for musical analysis.

In numbering and analyzing my transcriptions in this way, it is important to remember that, just as the one-and-a-half-tone shift from Ab to B and the semi-tone shift from B to C are both considered to be a distance of one scale tone in the Western C harmonic minor scale, regardless of their relative frequency distance, so one scale step in the pelog is comparable to any other, regardless of its interval size. In other words, one scale-tone step is functionally equivalent to any other. The single scale tone between ding and dang, which translate, for our purposes, into C# and A, serves the same interval function as that between dang and dung, which translate into A and G# – they are both adjacent keys on the instruments, and a descending pokok shift between them, in both cases, would be realized in gangsa norot figuration as (1)/1-2-1-0-1-0/, though these two identical patterns may sound quite different because of sheer acoustics:

![Gangsa norot kotekan #5 (i-a) and #6 (a-u).](image)

Keeping these distinctions in mind, the melody for Ongkek-Ongkek Ongkir, regardless of varying interval sizes, and focusing only on the number of scale tones traveled, is labeled for the following analyses as:
Figure 2.10. *Pokok* melody #3 (*Ongkek-Ongkek Ongkir*) with *pokok* tones analyzed numerically.

With this basic understanding of how I have labeled and divided all of my *reyong* variations, it is now time to turn to a deeper analysis of the individual two-beat cells.
CHAPTER III: The Template

3.1 Basic Polos Template

In order to understand both the freedom and the limitations of reyong norot "improvisation," we must begin with a basic norot template. I know that such a template exists for two reasons. The first is that, on my initial meeting with Alit, he explained to me that any norot that he played on the reyong was "from the 'base.' You cannot just go anywhere, not just do what you want [...] It's from the base, what I give you [...] I feel from that." Though he could not explain to me what the "base" was, I asked him to play me an example of one on the first position penyorog of the reyong. The musical example that follows is the "base" that he played for the Oleg melody. The dong in beats 4-5 do go outside the normal span of the penyorog's range, but this was simply to show me a "base" — he never played them at any other time:

Almost every two-beat cell in this base is an exact imitation of strict gangsa polos norot. This fact brings me, through some extrapolation, to my second assertion as to why there is a master template on which each reyong norot figuration is at least loosely based. There are some kotekan types that exist on the gangsa but not on the reyong. Nyog cag, for instance, is a form of kotekan in which the polos plays duple subdivisions coinciding with the neliti line (the beats) and the sangsih plays exactly in between (the off-beats.) The two parts

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[40] Interview with Dewa Ketut Alit, January 2002.

[41] Those that are not, such as the cell from beats 16 (gong) to 2, whose second subdivision dung would have been a dang in strict gangsa norot, will be explained in Chapter IV.
often cross over each other, and the pitch range of *nyog cag kotekan* can be quite wide. An example of *gangsa nyog cag* is notated below:

\[
\begin{align*}
\text{solfege: } & (u) a i a u e o e u a i a u e o e u a u e o e \\
\text{neliti: } & 3C \quad 42 \\
\text{solfege: } & (u) a u e u e o e
\end{align*}
\]

*Figure 3.2. Gangsa nyog cag kotekan.*

There is no such thing as a *reyong nyog cag*. While it is a common elaboration technique on the *gangsa*, it simply does not work on the *reyong*, due to the limited ranges of each player, and to the fact that it would be physically impossible to play *nyog cag* on a single instrument, such as the *reyong*, without the players' hands colliding as they attempted to interlock. The fact that both *gangsa* and *reyong* have a style of elaboration known as *norot* implies that it would be played, within reason, the same way on both instruments. This is a particularly convincing argument because *norot* figuration is so strict on the *gangsa*—there is only one way to play it. For the above reasons, I have chosen to name the *gangsa polos norot* figuration—as examined in chapter 2—the “*norot template*,” and to analyze all *reyong norot* realizations in relation to that template, exploring the ways in which they deviate from it, and attempting to explain and categorize each departure from the master template. The complete set of twenty-five templates, which I will often refer to as “*polos notes*” or “*polos templates*,” because of their strict tracking of the *gangsa polos norot* figuration, are shown in Fig. 3.3 below:

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42 From Vitale, 2001: 5.
0-0 in the pokok line is elaborated as (0)//1-0-1-0/1-0-1-0//:

solfege: (i)//o i o i o// (0)//e o e o e o// (e)//u e /u e u// (u)//a u /a u a// (a)//i a i a/ i a a/
numbers: (0)//10 1 0 1 0 1 0// (0)//10 1 0 1 0 1 0// (0)//10 1 0 1 0 1 0// (0)//10 1 0 1 0 1 0//

solfege: (i) 0-0 i (o) 0-0 o (e) 0-0 e (u) 0-0 u (a) 0-0 a
shift: 0-0 0-0 0-0 0-0 0-0 0-0 0-0 0-0

1-0 in the pokok line is elaborated as (1)//2-1-2-1/0-0-1-0//:

solfege: (0)//e o e o e o// (e)//u e /u e u// (u)//a u /a u a// (a)//i a i a/ i a a/
numbers: (1)//2 1 2 1/0 0 1 0// (1)//2 1 2 1/0 0 1 0// (1)//2 1 2 1/0 0 1 0// (1)//2 1 2 1/0 0 1 0//

solfege: (o) 1-0 i (e) 1-0 o (u) 1-0 e (a) 1-0 u (i) 1-0 a
shift: 1-0 1-0 1-0 1-0 1-0 1-0 1-0 1-0

2-0 in the pokok line is elaborated as (2)//3-2-3-2/0-0-1-0//:

solfege: (e)//u e /e i o i// (u)//a u /a o e o// (a)//i a i a/ e e u// (i)//o i o i/ u u a// (o)//e o o/a a a a/
numbers: (2)//3 2 3/0 0 1 0// (2)//3 2 3/0 0 1 0// (2)//3 2 3/0 0 1 0// (2)//3 2 3/0 0 1 0//

solfege: (e) 2-0 i (u) 2-0 o (a) 2-0 e (i) 2-0 u (o) 2-0 a
shift: 2-0 2-0 2-0 2-0 2-0 2-0 2-0 2-0

3-0 in the pokok line is elaborated as (3)//4-3-4-3/0-0-1-0//:

solfege: (u)//a u /a i o i// (a)//i a i a/o o e o// (i)//o i o i/ e e u// (o)//e o o/u u a// (c)//u e u/a a a a/
numbers: (3)//4 3 4/0 0 1 0// (3)//4 3 4/0 0 1 0// (3)//4 3 4/0 0 1 0// (3)//4 3 4/0 0 1 0//

solfege: (u) 3-0 i (a) 3-0 o (i) 3-0 e (o) 3-0 u (c) 3-0 a
shift: 3-0 3-0 3-0 3-0 3-0 3-0 3-0 3-0
4-0 in the pokok line is elaborated as (4)//0-4-0-4/0-0-1-0//:

solfege: (a)//i i a// (i)//o i o// (o)//e o o/e e e// (e)//u u e/u u u// (u)//a u a/a a a//
numbers: (4)//0 4 0 0 1 0// (4)//0 4 0 0 1 0// (4)//0 4 0 0 1 0// (4)//0 4 0 0 1 0// (4)//0 4 0 0 1 0//

Figure 3.3. Numerical analysis of polos templates for norot figuration.

In my transcriptions of Alit’s playing, there are some few instances in which, at one reyong position, he actually does play a complete and strict polos template, exactly as a gangsa player would. For example, in six instances throughout his twenty-three variations of the penyorog (position 1) in New Composition, he realizes the pokok line deng to deng (0-0), found in beats 8-10 after the first kempur, 16-18 after the first kemong, and 24-26 after another kempur, in a perfect (0)//1-0-1-0/1-0-1-0// template:

In Oleg, just before the kemong, he twice realizes the penyorog part dang to dung in an exact 1-0 polos template, (a)//i-a-a/u-u-a-u//:

Figure 3.4. Reyong polos template #1 – New Composition, penyorog (e-e).
And in Kebyar Jaya Semara, in the dong to ding pokok movement just after the gong (beats 8-2), the pengenter (position 2) plays a perfect 1-0 polos template on four of Alit’s 54 variations. Incidentally, this (o)//e-o-e-o/i-i-o-i// figuration is the elaboration that Alit has told me he would teach to a Canadian pengenter musician, such as myself, playing this piece:

In some of Alit’s reyong norot figuration, the polos template is almost completely abided by – no non-template notes are sounded – but some rests are inserted, either for variety, or, when the melody is played faster, by necessity. These rests seem fairly randomly placed – at some point, Alit plays the same template with a rest in all of the eight sixteenth-note subdivisions, and in various combinations. The only constraint seems to be that, generally, Alit does not rest for two consecutive sixteenth-notes. In a 0-0 section of the pokok line, for instance, he uses not only the //1-0-1-0/1-0-1-0/ polos template, but also, in various cases, //1-0-1-0/1-0-1 //, and //1-0 _ 0/1-0 _ 0//, and //1-0 _ 0/ _ 0 _ 0//, and //0 _ 0/ _ 0 _ 0/, and //0 _ 0/ _ 0 _ 0/, and //0 _ 1-0/ _ 0 _ 1 _//, and so on. A few examples are shown in Fig. 3.7 below, taken, respectively, from Ongkek-Ongkek Ongkir, New Melody, New Composition, and New Melody.
Figure 3.7. Reyong polos templates with rests #1 (from Ongkek-Ongkek Ongkir), #2 (from New Melody), #3 (from New Composition, and #4 (from New Melody).

The perfect polos template example from Fig. 3.5 above is also realized several times with a rest in the eighth sixteenth-note subdivision, coinciding with the stroke of the kemong. It is, in fact, very common for Alit to rest in the reyong norot sixteenth-note subdivision coinciding with colotomic markers such as gongs, and sometimes jegogan tones. This, Alit says, is so that the elaborating instruments don’t “get in the way” of the important structural strokes of the sparser instruments.43

Figure 3.8. Reyong polos template with rests #5 – Oleg Tumulilingan, penyorog (a-u).

43 Interview with Dewa Ketut Alit, January 2002.
In the Kebyar Jaya Semara example shown in Fig. 3.6 above, Alit realizes the pengenter (position 2) part twice as a perfect polos template but with rests in the second and fifth sixteenth-note subdivisions:

![Pengenter Template](image)

solfege: (o)/e _ o _ i _ i/
numbers: (1)/2 _ 2 1 0 1 0/

![Pokok Template](image)

solfege: (o)
shift: 1-0

Figure 3.9. Reyong polos template with rests #6 – Kebyar Jaya Semara, pengenter (o-i).

One other reason to place rests in an otherwise intact polos template line would be to play in accordance with the range limitations of each position on the reyong, particularly in the case of the third position, ponggang. In Fig. 3.4 above, the penyorog (position 1) in New Composition realizes a deng to deng cell as (0)//1-0-1-0/1-0-1-0//, or (e)u-e-u-e/u-e-u-e//, a perfect polos template. The ponggang, whose part often at least loosely mirrors that of the penyorog, cannot play exactly the same figuration in this particular case, because the deng is out of its range. In almost all of the deng to deng pokok cells in New Composition, therefore, Alit inserts rests in the ponggang part where the unavailable deng should be – most likely being played, instead, by the pengenter below. The ponggang is realized as

( _ )//1 _ 1 _/1 1 //, or ( _ )//u _ u _/u _ u _//:

![Penyorog Template](image)

solfege: (e)u e u e / u e u e/
numbers: (0)//1 0 1 0 1 0/

![Ponggang Template](image)

solfege: ( _ )/u _ u _/u _ u _/
numbers: ( _ )//1 _ 1 _/1 _ 1 //

![Pokok Template](image)

solfege: (e)
shift: 0-0

Figure 3.10. Reyong polos template with rests #7 – New Composition, ponggang (e-e)
3.2 The Kempyung

Because of the limited range of each reyong position, of course, it is also perfectly acceptable for a player to make use of the kempyung notes that come within his/her range. As previously described, the kempyung of a given tone is the note at an interval of three scale tones away, and one can play the kempyung above, as the gangsang sangsih line does in non-interlocking norot elaboration, but also the kempyung below, in reyong norot. For the note ding, for instance, the kempyung above is dung and the kempyung below is deng. While the latter does not frequently occur in gangsang figuration, the four reyong musicians’ smaller ranges perhaps demand a freer use of all available musical tools. When I asked Alit why kempyung below could be used in reyong but were not generally employed in gangsang kotekan, he said simply “because it’s reyong” – the instrument merely follows a different set of constraints. The ‘strict’ polos template cells that I have outlined in Fig. 3.3 above are shown alongside their kempyung in Fig. 3.11. From this point forward, any cell which makes use of a combination of polos template notes, kempyung, and rests, and does not use any notes outside of those constraints, will be referred to as being “adherent to the template,” or “template-abiding.” It is important to note here that this general “template” is different from a strict polos template,” in that it does not necessarily perfectly track the gangsang polos norot line, often jumping between kempyung and gangsang polos tones.

kempyung above
0-0: template
kempyung below

solfege: (u)/auau/aua/ (a)/iaia/iaia/ (i)/oiio/oiio/ (o)/oeoe/oeoe/ (e)/ueue/ueue/ (i)/oiio/oiio/ (o)/oeoe/oeoe/ (e)/ueue/ueue/ (i)/aiia/aiia/ (i)/oiio/oiio/ (o)/oeoe/oeoe/ (e)/ueue/ueue/ (i)/aiia/aiia/ (i)/oiio/oiio/ (o)/oeoe/oeoe/ (e)/ueue/ueue/ (i)/aiia/aiia/ (i)/oiio/oiio/ (o)/oeoe/oeoe/ (e)/ueue/ueue/

solfege: (i) i (o) 0-0 0-0 0-0 e (u) 0-0 u (a) a
shift: 0-0 0-0 (e) 0-0 0-0 0-0 0-0 0-0

44 There are some exceptions to this, but they are few and will not be explored here.
45 For visual clarity, the higher kempyung are always shown to be above, and the lower kempyung, below the polos template notes in these examples, even if these notes are outside the actual range of the instruments.
49

**Figure 3.11.** Numerical analysis of polos norot templates and their kempyung.

In some cases, as with the polos templates shown in Figs. 3.4 to 3.10 above, a full two-beat cell might be made up entirely of pitches from either the kempyung above or the kempyung below the template. For instance, Alit realizes the dong to ding shift in Kebyar Jaya Semara several times in both the penyorog (first) and ponggang (third) positions as //i-a-i _/u-u_a _//, or //0-4_0 _/3-3_4 _//, and several times as //i-a-i _/u _a _//, or //0-4_0 _/3 _ 4 _//, both of which contain only high kempyung notes:

Conversely, the cell may be divided in half, with the first four sixteenth-notes comprised entirely of template notes, for instance, while the last four are all upper kempyung, as in New Composition’s ding to dung (2-0) move, which Alit plays once in the pengenter position as//o-i-o-i/o-o-e _//, or //3-2-3-2/3-3-4 _//:

---

**Figure 3.12.** Reyong template with kempyung #1 and #2 – Kebyar Jaya Semara, ponggang (o-i).
Similarly, he once realizes a ding to dung shift in the pemetit (fourth position) of New Melody, as //o-i _ i/o _ e _//, or //3-2 _ 2/3 _ 4 _//, slightly more complex than the figuration in Fig. 3.12 because of its rests. He uses this pattern five times for a ding to dung pengenter shift in New Composition as well:

Generally, however, what happens in a given reyong norot cell is a combination of rests, polos template notes, and kempyung, both above and below. When notating these, I abbreviate the polos template notes as ‘t,’ the kempyung above or higher kempyung as ‘h,’ and the kempyung below or lower kempyung as ‘l.’ This technique of combining polos template and kempyung may be as simple as inserting one kempyung into an otherwise intact polos template line in order to stay within the range of a single reyong position, as in a 3-0 pokok movement being elaborated as //4-3-4-3/0-0-3-0//, or //t-t-t/l-t-l-t//, with the seventh position ‘3’ being the lower kempyung to the template note ‘l.’ Alit plays such a figuration, realized as //u-e-u-e/a-a-e-a//, several times in the first position penyorog of New Composition for a deng to dang pokok shift:
Figure 3.15. Reyong template with kempyung #5 – New composition, penyorog (e-a).

He also plays this same /4-3-4-3/0-0-3-0/ pattern in the pengenter (second position) going from ding to deng in Ongkek-Ongkek Ongkir. The cell is realized, in this case as /o-i-o/i/e-e-i/e/:

Figure 3.16. Reyong template with kempyung #6 – Ongkek-Ongkek Ongkir, pengenter (i-e).

Commonly, though, there is a more even spread of polos template and kempyung notes, as well as rests, used in Alit’s reyong norot figuration. In many of the ponggang realizations of New Composition’s dang to deng move, for instance, Alit plays /u-a-u-a/_ a-u_/, or //1-2-1-2/_ 2-1_/, which may be analyzed as //h-t-h-t/_ 1-t_/:

Figure 3.17. Reyong template with kempyung #7 – New Composition, ponggang (a-e).
While this last example is doubtless played as such because of the limited range of the ponggang part, Alit often plays an elegant combination of polos template notes and kempyung when it is not so necessary to do so, in order to create a more interesting or mature figuration. In four of the deng to ding (2-0) shifts in Ongkek-Ongkek Ongkir, for instance, Alit realizes the first position penyorog as //u-e-u-a/e-u-a //, or //3-2-3-4/2-3-4 //, which translates into //t-t-t//1-t-h-h//.

\[
\begin{align*}
\text{penyorog:} & \quad \text{solfege: } ( )//u \ e \ u \ a/e \ u \ a // \\
& \quad \text{numbers: } ( )//3 \ 2 \ 3 \ 4/2 \ 3 \ 4 // \\
\text{pokok:} & \quad \text{solfege: } (e) \\
& \quad \text{shift: } 2-0
\end{align*}
\]

Figure 3.18. Reyong template with kempyung #8 – Ongkek-Ongkek Ongkir, penyorog (e-i).

In New Composition, he twice plays the pengenter realization of dung to dang (4-0) as //o-o-e/o-e-i //, or //2-2-3/2-3-1 //, which I analyze as l/h-h/l-h-t //:

\[
\begin{align*}
\text{pengenter:} & \quad \text{solfege: } ( )/o \ o \ e/o \ e \ i // \\
& \quad \text{numbers: } ( )//2 \ 2 \ 3/2 \ 3 \ 1 // \\
\text{pokok:} & \quad \text{solfege: } (u) \\
& \quad \text{shift: } 4-0
\end{align*}
\]

Figure 3.19. Reyong template with kempyung #9 – New Composition, pengenter (u-a).

All of the examples discussed above, varied and complex as they may be, fall inside the limitations of the strict template. Without ever deviating from the “base,” the reyong player has an enormous amount of variational freedom in his/her norot realizations. What is more interesting and exciting is attempting to explain the two-beat cells that do not adhere to the template, endeavoring to find a system in those figurations that are working outside of the existing structure.
The Balinese have the word wayah, which, according to Alit, translates roughly as “great,” and which I have come to understand as meaning “mature” or “highly developed and complex.” When he was playing variations of reyong norot, Alit would often stop after one and say, “that was very wayah.” At the time I had no idea what he was talking about—they all sounded pretty complex to me. Looking back now, I can see that this was what he was referring to: the elasticity of the template, a good musician’s ability to stretch the template in infinitely complex but stylistically relevant ways.

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46 Interview with Dewa Ketut Alit, January 2002.
CHAPTER IV: Categories of Deviation from the Norot Template

4.1 The Concept of “Deviant” Cells

In each of the eight sixteenth-note subdivisions of a single cell, there are four different things that a player can do without deviating from the template: s/he can play the template note, play the kempyung above, play the kempyung below, or rest. This leaves two other pitch classes in the five-tone pelog scale that fall outside of the “acceptable” template. These tones, which are the scalar neighbors, both above and below the template tone, I call “nonstandard” notes, or statistical “deviations.” For each pokok shift, then, there are sixteen possible opportunities to use nonstandard tones, two for each of the eight subdivisions in the cell. With twenty-five different possible pokok shifts, five for each of the five templates explored in chapter three, there are a total of 400 possible deviant notes. Of course, at some point in the hundreds of variations that I transcribed from Alit’s playing, almost every one of these deviant notes is used. While initially disheartening, this realization led to the most interesting part of my analysis – the discovery of the very ordered way in which this chaos was enacted, an over 90%-accurate explanation for the syntax of this natural musical language, which, like any living language, could not consistently fit into a template, but would most often deviate from it in stylistically explicable or predictable ways.

In mathematical terms, what I am attempting to do is to reduce the set, or total number of possible realizations – theoretically $6^8$ (6x6x6x6x6x6x6x6, or 1,679,616) different possibilities for any one given cell – into a well-defined (and much smaller) subset – the

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47 A 1-o shift, for instance, may be o-i, e-o, u-e, a-u, or i-a.
48 This figure was obtained through a simple mathematical equation. For each eighth-note subdivision in a cell, there are theoretically six things that a musician can do – s/he can play one of five tones, or s/he can rest. There are eight subdivisions in each cell. Multiplying 6 (the number of possibilities for each subdivision) to the power of 8 (the number of subdivisions in a cell) – 6x6x6x6x6x6x6x6 – will give the total number of possible combinations of tones – 1,679,616 – which includes unlikely cells, such as one made up entirely of dang, or entirely of rests. This is true because each of the six possibilities in one subdivision may be combined with any one of the six possibilities in each other subdivision – in any two adjacent subdivisions alone there are 6x6, or 36 combinations: ding may be followed by any of the six possibilities (equaling six total possibilities), as may dong (12 possibilities in total), as may dung (18, in total), as may dang (24, in total), as may dang (30, in total), as may a rest (36 total possibilities.) This equation is easier to understand if explained using smaller figures. Let us say that we have one subdivision, and that there are two possible notes that may be played in this subdivision, notes which we will call a and b. According to mathematical logic, there are 2, or 2 possible combinations of a and b. These are 1 – a, and 2 – b. In a cell with two subdivisions, there would be 2, or 2x2, or four possible combinations of a and b. These are 1 – aa, 2 – ab, 3 – ba, and 4 – bb. In a cell with three subdivisions, there would be 2, or 2x2x2, or eight possible combinations of a and b. These are 1 – aaa, 2 – aab, 3 – aba, 4 – abb, 5 – baa, 6 – bab, 7 – bba, and 8 – bbb.
likely realizations that a Balinese musician would play. More than just a probabilistic approach to describing the likelihood of different “improvisations” for a given cell, however, my own analysis will also provide an interpretation or rationale for different deviant tones. These are categorized in the sections to follow, and here again, I must emphasize that these categories are my own creation, my own attempt to understand and organize an inherent system from which I am an outsider. They are not categories used, nor maybe ever needed by the Balinese musicians themselves. To quote Marcia Herndon:

I do not wish to suggest, as Chomsky (1965) was accused of doing, that [my analysis] replicates the cognitive system of [my] informants. On the contrary, it involves the active intrusion of [an] ethnomusicologist, who states, to the best of [her] ability, what the variations and rules of occurrence are.  

4.2 Delayed Pokok Tone Unisons

One of the most consistent deviations from the template, the first that I noticed, occurs in Alit’s initial variation of each payasan (the ugal melody), that I cycle for him. More often than not, when starting in the subdivision directly after gong (he would never begin playing with the gong, because that subdivision belongs to the previous beat), he deviates from the template in order to begin playing with what I call a “delayed unison” of the gong tone, the pokok tone that sounds on the previous sixteenth-note, coinciding with gong. For instance, each time he begins cycling the penyorog (position 1) or the ponn gang (position 3) in Oleg, which opens with dung to dung (0-0) in the calung part, he does not begin with a “rule-abiding” (u)//-a-u-a-u/, or (0)//1-0-1-0/, though he may play this in other variations, but with (_)//u-u-a-u/, or (_)//0-0-1-0/. The dung (0) in the first sixteenth-note subdivision, being the same tone as the gong tone played by the calung and jegogan in the rest just before it, is the delayed unison. This phenomenon may be observed in the first Oleg ponn gang realization that Alit plays, while the second returns to a perfect adherence to the polos template:

The same trend may be observed in the pengenter (position 2) realizations of Ongkek-Ongkek Ongkir, whose pokok melody begins with a 3-0 move from ding to deng. A pengenter line following the template in this cell might play //o-i-o-i/e-e-i-e//, or //4-3-4-3/0-0-3-0//, with the ding (3) in subdivision seven as a lower kempyung to the template dung (1). Alit does, indeed, often realize the pengenter in a like or similar fashion. The first time he cycles it with me playing first position penyorog, however, he begins with //i-i-e-i/, or //3-3-0-3/, again opening with the same pitch class as the gong tone that sounded one sixteenth-note earlier. In subsequent variations, as shown below, he returns to a stricter tracking of the template line:

It seemed simple enough to explain this particular deviation: the pure template line sounds the gong tone simultaneously with the gong itself. As mentioned earlier, however, this strong beat belongs to the previous cell, its last subdivision, and Alit, beginning to cycle on the next subdivision (the beginning of the following cell), would not have sounded that

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50 The deng (0) in this four-note unit is also a deviation from the template, which will be explored in the section entitled “Reverse Norot.”
particular tone with the gong. Alit explained to me once that it is important for the elaborating instruments to emphasize the gong tone, either at the same time as the calung, or temporally close to it.\footnote{Interview with Dewa Ketut Alit, February, 2002.} Still wishing to emphasize the gong tone of that unplayed cycle, therefore, he would play the tone in the first subdivision of beat one (just after the gong), thereby deviating momentarily from the master template. Extrapolating only slightly, one could extend that freedom to the norot figuration after any gong stroke, not simply the first in a series of consecutive cycles. When I asked Alit about this, he told me "it is good feeling to stop when the gong plays and play deng [the gong tone in that particular case] after,"\footnote{Interview with Dewa Ketut Alit, March, 2002.} meaning that it is good to rest in the eighth subdivision of the last cell in a cycle, and to play the gong tone one subdivision late, in the first subdivision of the following cycle, thereby temporarily deviating from the template. This would explain most of the deviations in the first subdivision of the first beat in any cycle. However, Alit makes similar deviations at the beginning of many beats throughout a given cycle, in any piece, and between any two pokok tones in all four positions of the reyong. It was not until I asked him to explain wayah to me that I truly understood the scope of this particular type of deviational freedom.

Asking a Balinese person to put wayah into plain words is a little like asking someone to describe "love" – it's just something you know – but Alit did manage to shed some light on the situation for me. He said: "sometimes you make wayah with the melody [...] When jegogan or jublag [calung] go to dong, you go early to dong, sometimes [late.]"\footnote{Interview with Dewa Ketut Alit, March, 2002.} He explained this to me further by having me play a short ugal payasan several times while he, in a deng to dong cell, struck only the dong of the pengenter, at first directly with my own dong and, in later cycles, one subdivision before me or one subdivision after. What this demonstration meant to me was that, with the base in mind, a reyong player wishing to emphasize any pokok tone, not simply the gong tone, could play with the timing somewhat, arriving at the pokok tone one subdivision early or late, resting as the pokok sounded, for instance, and then playing in delayed unison with it, thereby diverging from the template, in the next sixteenth-note subdivision. As will be seen in most of the following examples, the player would return to the template immediately by restating the pokok tone for one more subdivision.
This delayed *pokok* tone unison is the most common form of *wayah* timing freedom that I noted – in actuality, Alit only infrequently arrives at a *pokok* tone early, but will quite often use the delayed unison technique that I have described above, for any *pokok* tone, as in the *pemetit* (position 4) realization of *Oleg*’s *dung* to *deng* beats 6-8, for example. This particular illustration, with the deviant note called ‘?,’ and the *polos* and *kempyung* notes still referred to as ‘t’ (*polos* template), ‘h’ (higher *kempyung*), and ‘l’ (lower *kempyung*) is realized: //? - t - h - u / _ t - t _ /, or //u - u - e - u / _ e - u _ / // 54 The example is notated below, juxtaposed with a similar figuration, which is the nearest adherence to the template (using both *polos* and *kempyung* tones), //h - t - h - t / t - t - t /, or //e - u - e / e - e - u / e /. (This juxtaposition of template-abiding cells similar to the deviant cells being discussed will be employed, for the purpose of direct comparison, consistently throughout the analyses.)

![Figure 4.3. Delayed pokok tone unison #3 – Oleg Tumulilingan, pemetit (u-c), with template.](image)

A similar example to the previous deviant cell, but slightly more *wayah*, would have a rest on the second subdivision of the cell, which would otherwise have resolved the deviation through a *pokok* tone repetition. In such an example, the resolution from the template deviation is not aurally sounded until the third subdivision – varying, as it were, on the same //h - t - h - t / t - t - t / template line with //? _ h - t / _ t - t _ /, or //u _ e _ u / _ e - u _ / //. In this and similar cases, however, I posit that the deviation may be said to be tacitly resolved in the rest, assuming *pokok* tone repetition to be perceived aurally during the rest, as has been my own experience. Alit uses this particular realization for a 1-0 shift over forty times in *Oleg* alone, as in the *pemetit*’s *dung* to *deng* shift, occurring after the *kemong* stroke:

54 It should also be pointed out here that the three note u-u-e unit beginning this cell is, in fact, the same unit as the new *pokok* tone preparation used at the end of a *majalan* template cell. We may also say, therefore, that this “preparation” cell has simply been displaced by one beat, resolving not on the *pokok* tone, but on the *neliti* tone one beat later.
Another similar example, this time with kempyung as well as polos notes, is Alit's //o-o-e _o-e-i _// or //4-4-0 _4-0-3 _// realization for the dang to deng (2-0) pengenter (position 2) shift in New Composition. In this case, the allowable tones for the first sixteenth-note subdivision are ding (3), its lower kempyung deng (0), and its upper kempyung dung (1). Alit instead uses the deviant dong (4), the scalar upper neighbor of the polos template note ding:

Extrapolating from this wayah-inspired delayed unison theory only slightly, one could explain many of the deviations on the eighth subdivisions of cells as well. In a perfect template, the eighth subdivision is 0, the second pokok tone, or one of its kempyung. This then, of course, becomes the first pokok tone in the next two-beat cell. A melody moving from dang to dung to dong, for instance, would be analyzed as a 1-0 shift followed by a 2-0 shift, with the dung acting as the 0 (second pokok tone) in the first cell, and as the 2 (first pokok tone) in the second cell. A perfect polos template norot for this melody would be //i-a-i-a//u-u-a//a-u-a//o-o-e-o//. In my number notation, this would be analyzed as //2-1-2//0-0-1-0//3-2-3//2-0-1-0//, with the first cell using dung as its note 0, and the second cell using dong as 0, as seen in Figure 4.6 below:
If Alit decided to deviate with a delayed pokok tone unison on the first subdivision of the dung to dong shift in this hypothetical example, that second cell would then be realized as //u-u-a-u/o-o-e-o//. If he chose to rest in the eighth subdivision of the previous cell, in order to give further emphasis to this delayed unison, the full four beats would be //i-a-i-a/u-u-a-u/o-o-e-o//, as shown in the “preparation for delayed pokok tone unison 1”, in Fig. 4.7 below. If he did not choose to rest in that subdivision, yet still chose to perfectly follow the template, the full two beats would be //i-a-i-a/u-u-a-u/o-o-e-o// (preparation 2 in Fig. 4.7.) Herein lies the problem. Except when he makes what he considers to be a mistake – easy to detect, as they generally came just as I was losing control of where the beat was in my ugal playing, and were most often accompanied by a dirty look or a laugh in my direction – Alit never plays three consecutive subdivisions of the same note in any given norot realization. Yet, because of the first subdivision delayed pokok tone unison in the second (u-o) cell of our hypothetical norot figuration, there are now three successive dung. In order to remedy this mistake, Alit could rest in the eighth subdivision, as discussed above. However, if he chooses not to rest before his first subdivision deviations, he will likely choose to deviate in this eighth subdivision before them as well (most commonly by repeating the note used in the seventh subdivision preceding it). This phenomenon may be observed in the “delayed pokok tone preparation 3” in Fig. 4.7, a //i-a-i-a/u-u-a-a/u-u-a-u/o-o-e-o// figuration whose repeated dang in the eighth subdivision of the first cell prepares the delayed pokok tone unison dung:
Figure 4.7. Preparations for delayed pokok tone unison #1, #2, and #3 (a-u-o), with polos norot template.

Alit deviates in this fashion on the eighth subdivisions of cells almost as frequently as he does on the first subdivisions. An example of this may be seen in both the penyorog (position 1) and pemetit (position 4) realizations of New Melody’s dung to dung portion of the pokok, which, on several occasions, ends with two dengs or 4s, which then lead to two dungs or 0s. The last four of the first cell is a nonstandard note, as is the first zero of the new cell. The deviant four is used to prepare the deviant zero, as explained above, and the deviant zero is resolved by the template zero following:
4.3 Advanced Pokok Tone Unisons

In Alit’s statement, quoted above, concerning wayah, he suggests that a reyong player may arrive at the pokok tone not only one subdivision late but also one subdivision early. While he does not use this technique nearly as frequently as the delayed pokok tone unison, it is employed. I have named this early arrival an “advanced pokok tone unison.” In such a technique, the musician arrives at the new pokok tone, or one of its kempyung, not in the eighth, but in the seventh subdivision of the cell, though s/he generally restates the pokok tone (or rests) in the eighth subdivision as well. This seventh subdivision, however, normally contains the upper neighbor note of the new pokok tone, both in ngubeng norot, and in the three-note pokok tone anticipations of majalan norot. This is shown, with the seventh subdivision italicized for clarity, in the following examples: //1-0-1-0// for a 0-0 pokok shift, //0-4-0-1// for a 4-0 shift, and so on. As this note plays an essential role in the preparation of a new pokok tone, it cannot simply be removed altogether from the cell. Therefore, when Alit plays an advanced pokok tone unison, he shifts this upper neighbor tone ahead, to the sixth subdivision of the cell, resolving to the pokok tone in the seventh. In the two cells above – the 0-0 and the 4-0 – if he alters none of the other tones, the advanced pokok tone unisons would be realized, respectively, as //1-0-1-0// and //0-4-0-1//. This technique is exhibited in the examples to follow.

In the penyorog (position 1) of Ongkek-Ongkek Ongkir, Alit once realizes a dang to dang (1-0) shift as //a-a-e/u-a-a//, or //1-1-4//. The closest possible adherence to the general template, //u-a-e/u-a-a//, or //0-1-4//, which may be analyzed as //1-1-1//, reveals the use of three nonstandard notes. In this cell, the deviant dang (1) on the first subdivision is a delayed pokok tone unison. Those in the sixth and seventh
subdivisions demonstrate the concept of an advanced pokok tone unison. The pokok tone’s upper neighbor dang (1), generally sounded in subdivision seven, is shifted back into subdivision six, so that the pokok tone may be sounded in advance, in subdivision seven. This advanced statement of the pokok tone is further emphasized by the rest that follows it in subdivision eight:

![Figure 4.9. Advanced pokok tone unison – Ongkek-Ongkek Ongkir, penyorog (a-u), with template.](image)

Alit also uses kempyung notes in his advanced pokok tone unison cells. The dung to dang (4-0) shift in Oleg, for instance, is realized three times in the penyorog (position 1) as //u-u-a-a/e-e-e//, or //4-4-4-0//. When juxtaposed with the closest possible adherence to the template, //a-a-a-a/e-e-e//, or //0-4-4-3//, four deviant notes are found. The deviant dung (4) in the first subdivision is a delayed pokok tone unison. The deviant dang in the fourth subdivision is a suspension of the third subdivision, a technique that will be explained in the following section. The second half of the cell demonstrates the advanced pokok tone unison technique, using the //0-4-0-4-0// pattern examined above, but with //3-4-3//, the upper kempyung of the four-note //0-1-0-0// unit, in the second half (subdivisions five through eight):

![Figure 4.10. Advanced pokok tone unison with kempyung #1 – Oleg Tumulilingan, penyorog (u-a), with template.](image)
Another example, using both *kempyung* and *polos* template notes, is in a *dang* to *dang* portion of *New Composition*, in which Alit once realizes the *pengenter* (position 2) as /3-3-1-1/2-1-2-2/, which may be analyzed as //l-l-t/?-?-?/ll. In this *ngubeng* cell, the deviant *ding* on subdivision four is, again a suspension, to be explained in full in the following section. The deviant cells in subdivisions five through seven demonstrate advanced *pokok* tone unison. The *dong* (2) in subdivision seven is the *kempyung* of the new *pokok* tone *dang* (0); the *ding* (1) in subdivision six is the new *pokok* tone’s scalar upper neighbor, shifted from its usual place in subdivision seven to prepare for the advanced *pokok* tone unison. The *dong* in subdivision five is simply a deviance used to avoid four consecutive repetitions of the note *ding* (1). This cell is shown in Fig. 4.11 below, juxtaposed with the closest adherence to the template, /3-3-1-1/0-1-0-0/, or /3-3-1-1/2-1-2-2/: 

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Figure 4.11. Advanced *pokok* tone unison with *kempyung* #2—*New Composition*, *pengenter* (a-a), with template.

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The use of rests, often in combination with *kempyung*, makes these deviant cells more difficult to identify at times. For instance, in the *dung* to *ding* (3-0) shift in *New Melody*, Alit once realizes the *pengenter* (position 2) part with a /3-3-1-1/0-1-0-0/, or /2-1-1/1-2-2/ figuration. A similar figuration that perfectly follows the template, using both *polos* and *kempyung* tones, would be /3-3-1-1/0-1-0-0/, or /2-1-1/1-2-2/, analyzed as //h-h-h/l-l-t//. Juxtaposition with this template-abiding figuration reveals nonstandard tones in subdivisions six and seven of the deviant cell in question, tones which illustrate my concept of the advanced *pokok* tone unison. In this cell, Alit is essentially replacing the *polos* template’s /0-0-1-0//, or /i-i-o-i// end unit with /0-1-0-0//, or /i-o-i-i//. However, he places a rest in subdivision five (/0-1-0//), and uses the lower *kempyung* *deng* (2) in the place of the *pokok* template note *ding* (0), thus creating the /1-1-2-2//, or /o-e-e// end unit:
These two concepts — delayed and advanced pokok tone unisons — work quite well in attempting to explain deviation occurring in the sixteenth-note subdivision directly following the first pokok tone (subdivision one), and some of the deviation in the two subdivisions immediately preceding the second pokok tone (subdivisions six and seven), as well as the one coinciding with it (subdivision eight.) However, upon further analysis it will be noted that Alit uses a similar wayah-style deviation quite frequently in other sixteenth-note positions as well. These could not be explained for me in the same manner. And, while Alit would simply call these figurations “very wayah” or “more wayah,” as a Westerner without Balinese “feeling,” I wanted a more technical basis for deciding when wayah was wayah and when it was a mistake warranting a pained look from my Balinese teacher. Therefore, through further extrapolation on the delayed and advanced pokok tone unison concepts, I developed my next template deviation categories, which I call “suspension” and “anticipation.”

4.4 Suspensions and Anticipations

In the mid-1970s, two linguists by the names of Wolfram and Fasold studied the phenomenon of final stop deletion in consonant clusters — as in the deletion of the d sound in the word cold — in speech among the Black population of Washington DC. While there initially seemed to be a randomly varying level of final stop deletion depending on the sentence used, certain patterns eventually became clear. Wolfram and Fasold discovered that the letters both preceding and following the final stop in question had a great deal to do with the consistency of its deletion. While only 25.2% of the test speakers deleted their final stops
after a non-sonorant\textsuperscript{55} and before a vowel, as in the bracketed ‘t’ in the phrase “lif(t) it,” the linguists found that 83.3\% of speakers deleted their final stops after a sonorant and before a non-vowel, as in the ‘d’ of “san(d) castle.”\textsuperscript{56} The letters that both preceded and followed their linguistic variable, therefore, became essential in explaining its variation.

Similar observations may be made of Alit’s musical language. In the examples quoted in the above categories – delayed and advanced pokok tone unisons – one overriding factor becomes apparent. In each example, the “nonstandard” tone used is either directly followed or directly preceded by a rest or, more commonly, a repetition of the same tone – this time, a template note. Similar note repetition is also used quite frequently in deviations on other subdivisions as well. In keeping with the idea of “playing with timing,” I have labeled those deviant subdivisions directly preceded by a like tone from the template as “suspections,” and those directly followed by one as “anticipations.”

A handful of musical examples will clarify these categories. In a 2-0 pokok tone shift, as in the various dang to deng shifts in New Composition, Alit often realizes the pengenter (position 2) in a template-abiding //3-0-3-0// or //t h t h// _ t-l-t//, played, in the dang to deng case, as //i-e-i-e/ e-i-e/. Once, however, he suspends the third subdivision ding (3) into the fourth subdivision, where it is a forbidden note, resolving back to a template deng (0) in subdivision five, thereby creating a more wayah line:

//i-e-i/e-e-i-e//, which may be analyzed as //3-0-3\0-0-3-0// or //t-h-t-t-t-l-t//:

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4.13.png}
\caption{Suspension – New Composition, pengenter (a-e), with template.}
\end{figure}

In twenty-two of Alit’s penyorog (position 1) variations of Oleg’s dang to deng shift, three nonstandard notes are used in the manners discussed above: the first and eighth

\textsuperscript{55} A “sonorant,” in linguistics, is considered to be either the letter ‘l,’ or any consonant that is a nasal, as in the letter ‘m.’ A non-sonorant is a non-nasal consonant as in ‘k’ or ‘p.’

\textsuperscript{56} Wolfram and Fasold, 1974: 102.
subdivisions demonstrate the delayed *pokok* tone unison technique, though they may equally be described as being, respectively, an anticipation of the second subdivision tone and a suspension of the seventh. The fourth tone is a suspension of the third, resolving in subdivision five to a template note. It is realized as //u-u-a-a/e-e-u-u//, which may also be termed //1-1-2-2/0-0-1-1// or //?/-/-/t-t-t-?//, where a perfect template realization would have been //a-u-a-U/e-e-u//, or //2-1-2-1/0-0-1-0//:

Another example, this time with nonstandard notes in subdivisions one and three, occurs over fifty times in the *penyorog* realizations of the *deng* to *dong* shifts in both Oleg and Ongkek-Ongkek Ongkir, where a rule-abiding //u-e-u-a/u-a-1/i//, or //2-1-2-3/2-3-4//, becomes, through template note anticipation, //e-e-a/a-1/i//, or //1-1-3-3/2-3-4//:

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Figure 4.14. Complex deviant cell #1, containing delayed *pokok* tone unison, anticipation, and preparation for delayed *pokok* tone unison – Oleg Tumulilingan, *penyorog* (u-e), with template.

Figure 4.15. Complex deviant cell #2, containing delayed *pokok* tone unison and anticipation – Ongkek-Ongkek Ongkir, *penyorog* (e-o), with template.

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57 Because of the limitations of my word processing program, it is impossible to place the ‘i’ directly above the ‘e’, or the ‘4’ above the ‘1’ in the seventh subdivisions of these cells. It is important to note, however, that these two notes occur simultaneously, a two-note chord as displayed in the notation, in these and all other similar examples.
The deviant deng in position one, above, is a delayed pokok tone unison, though it may also be seen as an anticipation of the template note deng in subdivision two. The deviance in position three is, of course, a wayah-style anticipation of the template’s lower kempyung dang (3) in subdivision four.

In some variations, which Alit considers to be even more wayah, a forbidden note will be played in anticipation of a template note, but, instead of sounding the template note in the next subdivision, Alit will rest. I use the above example as an illustration of this more wayah style of variation: Alit will play the third subdivision dang, a nonstandard note which I have explained as being an anticipation of the template dang in subdivision four, but will then rest in subdivision four, instead of aurally sounding that resolution back to the template line:

This, and numerous similar cases used throughout Alit’s norot variations are, in fact, similar to the example in Fig. 4.4, in which a first subdivision deviation, a delayed pokok tone unison, is followed by a rest. This deviation, which would generally be resolved by repetition of the same tone in subdivision two, may either be said to resolve in the third subdivision, or, as I have put forward, to be tacitly resolved in the second subdivision by assuming that a listener would continue to hear the pokok tone until a new note is sounded. Similarly, the third subdivision dang in the above example may be analyzed as an anticipation of the fourth subdivision dang, a note that, still ringing in the ears of the listeners, does not truly need to be played again. It is an anticipation resolved by a tacit return to the template tone dang in subdivision four – a rest – used for reasons of variety, to make the line more wayah, in the sense of giving it a more interesting contour or construction.
In transcribing Alit’s playing, I noticed a pattern in his variational technique – he would often play several consecutive variations that were quite similar, changing one cell in the cycle at a time, for instance, but keeping all other elements virtually the same. Alit most often plays the variations discussed above – with rests in the subdivision that an anticipation tone was leading to – in the cycle directly following or directly preceding one with an almost identical variation in which all the necessary resolution notes are present. It is this consistency in his seemingly methodical variation technique that leads me to put these rest-filled realizations in the suspension/anticipation categories, though the essential “resolution” notes are not officially stated.

This techniques of suspension and anticipation seem to be used only rarely as justification for nonstandard tones in the third subdivision of any cell, and virtually never for those in the second. Both do occur, however, as in the dang to ding (4-0) shift in the penyorog (position 1) realizations of Oleg. In the cell shown in Fig. 4.17, he alters a template-abiding //u-a-u-a/e-u-a _//, analyzed as //3-4-3-4/2-3-4 _// or //h-t-h-t/l-h-h _//, through a suspension of dung on the second subdivision and an anticipation of dang on the third. The resulting deviant cell, which Alit plays in seven different variations that I transcribed, is //u-u-a/e-u-a _//, analyzed as //3-3-4/2-3-4 _// or //h-t-h-t/l-h-h _//:

![Figure 4.17. Complex deviant cell #4, containing suspension and anticipation – Oleg Tumulilingan, penyorog (a-i), with template](image-url)

The same suspension/anticipation technique may be said to be used in subdivisions five and six, but there are other plausible explanations for deviations in the latter half of the cell, which will be explored in full in the next section.

In many cases, as seen in the previous example, the pair of like notes produced by an anticipation or suspension is often preceded or followed by another pair of like notes, one of which is a nonstandard note while the other is not – again falling into the
suspension/anticipation category. Though this is an interesting observation, it by no means occurs invariably, and will, therefore, not be deeply explored as a deciding factor on the appropriate times to use suspensions and anticipations.

4.5 Second-Half Flexibility

Alit seems to allow himself a great deal of freedom in the second halves of his norot cells. While the template for a majalan norot cell dictates a /0-0-1-0// ending, Alit often ends with /1-0-1-0//, /0-1-1-0//, and many other variations, some including kempyung, as in a /4-0-3-0// ending. While some of these endings, as in the /0-1-1-0// figuration, may be explained using the suspension/anticipation concept explored above – with the note ‘1’ in subdivision six as an anticipation of the note ‘1’ in subdivision seven – the extreme diversity of Alit’s second-half variations demands a different explanation. Each of the deviations stated above may be explained through the concept of second-half flexibility, an idea that may only be understood through exploration of both majalan and ngubeng norot figuration as well as some basic interlocking drum (kendang) patterns.

The last three notes of the majalan norot figuration are an anticipation of a shift in the underlying motion – they prepare a new pokok tone. One might presume that this would be an area of relative contrapuntal freedom in norot figuration – that, since the three-note anticipation already diverges from the one-to-one note alternation characteristic of norot, it may have the freedom to diverge as far as possible, so long as it leads in some manner to the new pokok tone. This may certainly be a very plausible explanation. There seem to be, however, more logical patterns to the manner in which Alit, as he leads to a new pokok tone, diverges from the classic norot figuration – be it the one-to-one note alternation of a ngubeng (0-0) norot cell, or the three-note anticipation prescribed by the gangsa norot template for all majalan pokok shifts.

Ngubeng-Majalan Switch

The simplest of these divergent patterns, the first subcategory of the second-half flexibility deviation types, is what I call a ngubeng-majalan switch. In this particular form of deviation, the second half of a majalan figuration is realized using an ending characteristic of
a ngubeng norot figuration. For instance, New Melody begins with a ngubeng cell: dung followed by dung. The polos template for such a cell is //a-u-a-u/a-u-a-u//, or //1-0-1-0/1-0-1-0/>. In beats 6-8 of the same piece, the pokok line is a majalan (3-0) cell moving from dong to dung; its polos template is //e-o-e-o/u-u-a-u//, or //4-3-4-3/0-0-1-0/>. In a ngubeng-majalan switch situation, Alit would begin this hypothetical majalan cell with a template-abiding //e-o-e-o/, or //4-3-4-3/ but, in the second half, would replace the majalan /0-0-1-0/ end unit with the corresponding ngubeng /1-0-1-0/ end unit, making the whole of this cell //4-3-4-3/1-0-1-0//, or //e-o-e-o/a-u-a-u//:

Figure 4.18. Ngubeng template (u-u), Majalan template (o-u), ngubeng-majalan switch #1 (o-u).

Alit uses this ngubeng-majalan switch technique many times throughout his variations, in every piece and at all four of the reyong positions. For instance, in the dang to ding (4-0) shift in Oleg, one of his sixty-two pemetit (position 4) variations is realized //u_e_/o-i-o-i//, or //3_2_/1-0-1-0//, instead of a possible //u_e_/i-i-o-i//, or //3_2_/0-0-1-0// adherence to the template:

Figure 4.19. Ngubeng-majalan switch #2 – Oleg Tumulilingan, pemetit (a-i), with template.

Naturally, kempyung may also be used to fulfill this and other forms of second-half flexibility deviations, and, because of the limited ranges of each player, often must be
employed. In the *dang* to *deng* (2-0) shift in *Kebyar Jaya Semara* (KJS), Alit realizes the *pemetit* line several times with a //e _ i _/o-i-o-e//, or //0 _ 3 _/4-3-4-0// cell. In this realization, the o-i-o or 4-3-4 unit in the fifth to seventh subdivisions may be analyzed as the upper *kempyung* of u-e-u, or 1-0-1. The three tones, combined with the *deng* or ‘0’ on the eighth subdivision, create a /1-0-1-0// (u-e-u-e) unit, the template of *ngubeng norot* figuration leading to a *pokok* tone *deng*:

![Figure 4.20. Ngubeng-majalan switch with kempyung #1 – KJS, pemetit (a-e) with template.](image)

Another example of *kempyung* use in a *ngubeng-majalan* switch may be found in four of Alit’s fifty-six *pengenter* (position 2) realizations of the *dung* to *deng* shift in *Oleg*. While a realization true to the template may have been //e-i-e-i/e-e-i-e//, or //0-3-0-3/0-3-0//, which may be analyzed as //l-h-l-h/t-t-h//, these four variations follow a //i-i-e _i/e-e-i//, or //3-3_0_3// figuration. The deviant *ding* (3) in the first subdivision is a lower *kempyung* delayed *pokok* tone unison. The deviant *ding* (3) in subdivision five may be explained through *ngubeng-majalan* switch, being the lower *kempyung* to the *dung* (1) that would have created the /1-0-1-0// end unit characteristic of *ngubeng norot* figuration:

![Figure 4.21. Ngubeng-majalan switch with kempyung #2 – Oleg Tumulilingan, pengenter (u-c), with template.](image)
The use of rests allows these types of deviations to be even more diverse, while still following the simple ngubeng-majalan switch figuration. In the ponggang (position 3) realizations of Oleg, Alit twice realizes the dang to dung (1-0) shift as //a _ u _/a-u _/u//, or //1 _ 0 _/1-0 _ 0//. This cell contains two deviant tones, as evidenced by a comparison to the template-abiding //u-a-u-u-a-u-a//, or //0-1-0-1// figuration. The one in the first subdivision is a delayed pokok tone unison; that in the fifth subdivision is the first note of the four-note end unit making up the ngubeng-majalan switch. The rest in subdivision seven could easily be replaced by a dang (1) to complete the four-note /1-0-1-0/, or /a-u-a-u// unit:

Figure 4.22. Ngubeng-majalan switch with rests – Oleg Tumulilingan, ponggang (a-u), with template.

A combination of rests and kempyung create ever more complex deviations. For example, in 23 of Alit’s 79 penyog (position 1) variations of Oleg, 19 of his ponggang (position 3) variations, and two, each, of New Melody’s penyog and Kebyar Jaya Semara’s ponggang variations, a ding to dung (1-0) shift is realized as //a-u-a _/a-a-u _//, or //0-4-0 _/4-0-4 _//. This may be compared to a template-faithful //a-u-a/u-a-a-a//, or //0-4-0-4// figuration. In this deviant //a-u-a _/u-a-a _// realization, the dung (4) is the lower kempyung to the template note ding (1), and the template deviation on the fifth subdivision may be explained through the ngubeng-majalan switch sub-category of the second-half flexibility category. The rest in subdivision eight may quite easily be replaced by dang (0), thus completing the /1-0-1-0// ngubeng end unit, realized in this case with lower kempyung as /4-0-4-0// or /u-a-a-a//:
When Alit combines even this simple ngubeng-majalan switch technique with another deviation type, such as a preparation for a delayed pokok tone unison, his possibilities for variation seem virtually endless. In the dang to dung (1-0) shift in Oleg, for instance, Alit twice realizes the ponggang (position 3) part as //a-a-u-a/a-u-a-al, or //1-1-0-0/1-0-1-1/, diverging from a //u-a-u-a/u-a-a-a//, or //0-1-0-1/0-0-1-0// template cell, with deviant notes in four of the eight subdivisions. The dang in subdivision one is a delayed pokok tone unison, as the dang in subdivision eight is the preparation for a new delayed pokok tone unison in the following cell. The deviant dung in subdivision four is a suspension of the dung in subdivision three. The deviant dang in subdivision five may be explained as a ngubeng-majalan switch, though its characteristic /1-0-1-0// contour is obscured by the preparation for the delayed pokok tone unison in subdivision eight:

Using kempyung along with these other methods of deviation, as in the eight pengenter (position 2) variations of Kebyar Jaya Semara, Alit realizes a dang to deng (2-0) shift as //e_i-o-i-o-o//, or //0_3-3/4-3-4-4//. With the closest possible template-faithful figuration being //e_i-o-i-o-i-o//, or //0_3-4/3-3-4-3//, which is analyzed as
we may observe that Alit plays nonstandard tones on subdivisions four, five, and eight. The nonstandard tone on the fourth subdivision is a suspension; that on the eighth subdivision is an upper kempyung preparation for a delayed pokok tone at the beginning of the following cell. The deviation on the fifth subdivision may quite definitively be explained as a ngubeng-majalan switch, though, as in Fig. 4.24, the /4-3-4-3// end unit pattern, characteristic of a ngubeng-majalan switch using upper kempyung, is obscured by the dong (note ‘4’) deviation on the eighth subdivision:

Figure 4.25. Complex deviant cell #6, containing kempyung demonstrating suspension, ngubeng-majalan switch, and preparation for delayed pokok tone unison – Kebyar Jaya Semara, pengenter, (a-e), with template.

As evidenced by the above musical examples, Alit very commonly replaces a majalan four-note end unit /0-0-1-0//, in his reyong norot figuration, with a ngubeng /1-0-1-0// unit, often made more complex by kempyung and rests. Conversely, he may replace the ending of a ngubeng cell with a majalan four-note end unit, turning a /a-u-a-u/a-u-a-u//, or /1-0-1-0/0-0-1-0// cell into /a-u-a-u/u-u-a-u/, or /1-0-1-0/0-0-1-0//. This, however, is only a hypothetical example. In practice, Alit would use rests or kempyung, or else vary some notes in the first half of the cell – using a suspension of subdivision three on the fourth subdivision to make a /1-0-1-0/0-0-1-0// figuration, for instance – so that there would not be three adjacent note ‘0’ (dung).

In a dung to dung ngubeng cell in New Melody, Alit realizes the pengenter (position 2) three times as /0-o-e-e/i-i-e-e/, or /3-3-4-4/2-2-4-4//. The deviant deng (4) in the fourth subdivision is a suspension of the third subdivision deng, and the deviant deng (4) in the eighth subdivision is a preparation for a delayed pokok tone unison in the following cell. The ding in subdivisions five and six are lower kempyung to dung (0), which is the polos template

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58 The notes in the /4-3-4-3// unit are, of course, the upper kempyung of the polos template for a ngubeng end unit /1-0-1-0/>. 
note in subdivision six, while the *deng* (4) in subdivisions seven and eight are upper *kemypung* to *dang* (1), the *polos* template note in subdivision seven. The four-note end-unit, therefore, when reduced to its *polos* template tones (though still with deviations in subdivisions five and eight), is /0-0-1-1/. Aside from the note ‘1’ in subdivision eight, which has already been explained as the preparation for a delayed *pokok* tone unison, this unit is identical to the four-note *majalan* end unit, /0-0-1-0/, or, in an equivalent *kemypung* form, /2-2-4-2/. The above *ngubeng* cell, therefore, deviates from the template in three different ways. The first, in subdivision four, is a suspension; the second, in subdivision five, is a *ngubeng-majalan* switch; the third, in subdivision eight, is a preparation for a delayed *pokok* tone unison:

![Diagram](image)

**Figure 4.26.** Complex deviant cell #7, containing *kemypung* demonstrating suspension, *ngubeng-majalan* switch, and preparation for delayed *pokok* tone unison – New Melody, *pengenter*, (u-u), with template.

### Kendang Pattern Substitution

In order to grasp this next subtopic in the second-half flexibility category for *norot* template deviations – *kendang* pattern substitution – we must briefly explore some basic interlocking Balinese drum patterns. While *kendang* interlocking, like *reyong* interlocking, draws upon an extraordinarily rich and varied musical language, for this analysis it suffices to know that each *kendang* has a repertoire of up to four different strokes, depending on the style of drumming – both with open hands on either head of the drum or with a mallet on the larger head – and that each stroke on the *wadon* is complemented by a specific stroke on the *lanang*. The four most common strokes are a pitched stroke with the right hand on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on the larger head of the drum – called *dag* (which I abbreviate as D) on the *wadon*, and *tut* (T) on

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59 In Ch. 7 of his book, *Gamelan Gong Kebyar*, Michael Tenzer deeply investigates patterns in the interlocking drum parts in *gong kebyar* music. Specifically, for the following analysis, see pp. 261-9.

60 As explained in chapter 1, the *kendang* pair is tuned, like the metallophone pairs, so that one drum is higher than the other. The *lanang* is the higher (male) drum and the *wadon* is the lower (female) drum.
the lanang – and an unpitched left-handed stroke on the smaller head – kap (K) on the wadon, and pek (P) on the lanang. The two drums interlock, most often at four strokes per kempli beat, in such a way that “a stroke on one drum is normally answered directly by its equivalent on the other,” thus creating sets of balanced pairs as in D-T (or T-D) and K-P, (or P-K). Like the one-to-one note alternation characteristic of ngubeng norot figuration, or the polos/sangsih alternation characteristic of gangsana nyog cag kotekan, tut follows dag, for instance, in a DTDT… formula. However, unlike these melodic kotekan, “the order of the succession [in interlocking kendang parts] is not fixed and is often shifted within patterns. This happens when either of the drums plays a pair of consecutive strokes. The effect is to make the wadon and lanang exchange places with respect to the beat, as in [DTDT/DDTD], which, though it uses only two, not three, separate “notes,” closely resembles majalan norot figuration, as in //2-1-2-1/0-0-1-0//. These stroke-pair order reversals may be achieved in numerous ways; the above example is one such realization.

The other essential observation concerning kendang interlocking patterns is that, like the melodic kotekan parts that rely on sparser lines in the melodic hierarchy for the integrity of their pitch make-up, these rhythmic interlocking parts also seem to rely on metric hierarchies for their structural integrity. A revealing paragraph from Tenzer’s Gamelan Gong Kebyar, describing the basic properties of metric hierarchies, will clarify this relationship:

[What is stressed at the highest (sparsest, closer to the background meter) levels remains so at the lower (denser, closer to the surface) levels, but what is subordinate higher up becomes stressed lower down. If, for example, D is linked to gong and T to the midpoint, as in [(D)TD], this implies that T-D (weak-strong) ordering will govern activity at lower levels. But at the next level down, dividing the cycle into quadrants, the midpoint acquires greater stress. We would then expect [(D)TDTD], but this midpoint D conflicts with the higher level’s T. In order not to contradict the colotomic structure, T must become reinstated. The sequence of strokes at the quadrant level might thus become [(D)DTD], causing a reversal of stroke-pair orderings[…] Other configurations would be possible too, as long as T remains at the midpoint and D at the end. Moving to lower and lower levels, the switches from D-T to T-D ordering and vice versa generate syncopation.]

Fig 4.27 below continues this notion of metric hierarchy down to the sixteenth-note level, with the structural strokes at each level, those that affect the level below, boldfaced for

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63 Ibid., 264.
64 Ibid., 265.
clarity. This is only one of several possible figurations for the second half of a [(D)TD] structure, assuming a simple four-beat cycle for visual simplicity:

gong cycle (G) P G
half note (D) T D
1/4 note (D) D T T D
1/8 note D T D T T D T T D
1/16 note D T D T D T D T T D

Figure 4.27. Metric hierarchy in interlocking kendang parts.

Another possible realization for the above DT/DTDT/DTTD/ figuration at the sixteenth-note level might be DT/DTDT/DDTD//.

We now relate these basic drum concepts to reyong norot figuration. In taking the last eight strokes of both of the figurations listed above as a two-beat cell, and translating them into possible equivalent patterns for the norot figuration of a 1-0 pokok shift, we find that the second figuration, //DTDT/DDTD///, as mentioned above, translates into //2-1-2-1/0-0-1-0//, the strict template for a majalan norot figuration. The first, //DTDT/DDTD/// translates into //2-1-2-1/0-1-1-0//. It seems that Balinese reyong musicians also use principles similar to those underlying these successions of dag and tut strokes, characteristic of the interlocking kendang parts, for their reyong norot figuration. The deviant //2-1-2-1/0-1-1-0// pattern shown above, created out of a conversion of the basic properties of metric hierarchies in kendang parts into possible norot figuration, comprises – in combination with kempyung, rests, and eighth subdivision preparations for delayed pokok tone unisons – the patterns for the remainder of Alit’s deviations based on the concept of second-half flexibility. A handful of examples will clarify this last subcategory.

In one of his ding to deng (3-0) penyorog (position 1) cells in Ongkek-Ongkek Ongkir, Alit plays the simplest possible example of kendang pattern substitution, with no kempyung or rests in the second half of the cell. In this example, he changes a template-abiding //a _ a _/e-e-u// figuration, analyzed as //2 _ 2 _/0-0-1-0//, into a //a _ a _/e-e-u-u-e//, or //2 _ 2 _/0-1-1-0// cell. The deviant dung in subdivision six exhibits kendang pattern substitution, imitating the //DTDT/DDTD/// figuration explored in Fig. 4.27 above:
In some kendang pattern substitution, Alit also employs rests in the pattern, changing a /DTTD/ or /0-1-1-0/ four-note end unit, for instance, into /0-1 _ 0/. An example of this technique may be seen in one of his pemetic (position 4) realizations of the dang to ding (4-0) shift in Oleg, in which he varies a template-abiding //u-o-i _i-i-o//, or //3-1-0 _0-0-1-0//, as //u-o-i _i-i-o//, or //3-1-0 _0-1-0//:

Figure 4.29. Kendang pattern substitution with rests – Oleg Tumulilingan, pemetic (a-i), with template.

Kempyng are also used in kendang pattern substitution norot figuration. In one realization of the pengenter (position 2) part for a ding to dong (4-0) shift in Ongkek-Ongkek Ongkir, for instance, Alit plays //_ _i-o-e-i-o//, or //_ 4 _ _4/0-1-4-0//. With the ding (4) in subdivision seven as a higher kempyung of deng (1), the four-note end unit is a kempyung variation on /0-1-1-0//, equivalent to the kendang /DTTD//:
Combining rests, *kempyung*, and other forms of deviations with *kendang* pattern substitution makes Alit’s *reyong norot* figuration varied, indeed. For instance, the *dong* to *dung* (3-0) shift in *New Melody* may be realized the *penyorog* (position 1), faithfully to the template, as //a-u-a/_ u-e-u/, or //1-0-1-0/_ 0-4-0//. While he does use this figuration on occasion, Alit also once realizes the *penyorog* as //a-u-a-e/_ u-e-e/, or //1-0-1-4/0-1-4-4/, and once as //a-u-a-e/_ a-e-e/, or //1-0-1-4/_ 1-4-4//. The deviant *deng* (4) in the fourth subdivisions of these cells is a difficult case, and will be explored in the concluding remarks; the *deng* (4) in the eighth subdivisions are the preparations for a delayed *pokok* tone unison in the following cell. The deviant *dang* (1) in subdivision six may be explained through *kendang* pattern substitution, in this case replacing the template *majalan* end unit /0-0-1// with /0-1-1-0//, but changing the note ‘1’ in subdivision seven to its upper *kempyung* ‘4,’ and obscuring the basic end unit pattern with the delayed *pokok* tone preparation in subdivision eight, thus creating a /0-1-4-4// or _1-4-4// end unit:

![Figure 4.30](image)

**Figure 4.30. Kendang pattern substitution with rests and *kempyung* – Ongkek-Ongkek Ongkir, pengenter (i-o), with template.**

Figure 4.31. Complex deviant cells #8 and #9, containing *kempyung* (and rests) demonstrating *kendang* pattern substitution and preparation for a delayed *pokok* tone unison – *New Melody*, *penyorog* (o-u), with template.
4.6 Ubit Empat Substitution

In order to credibly analyze the variations on a few minute, specific elements of any language, one must first be extremely familiar with many of the wider characteristics of that language. Had Wolfram and Fasold, the linguists discussed above, not been aware of the concepts of English-language sonorants or vowels, or believed, through lack of familiarity with the language standard, that a final stop is meant to be silent in a “properly pronounced” consonant cluster in the English language, they would have been unable to make their astute observations about Black speech in Washington DC. Similarly, without a knowledge of many aspects of the gong kebyar musical language not specifically related to norot figuration, I would have been unable to analyze many of Alit’s variations in stylistically plausible ways. In order to understand probably 20% of his “deviations” – those that I have termed “ubit empat substitutions” – at least a general understanding of the forms of kotekan called ubit-ubitan must be achieved.

Ubit-ubitan elaborations can be divided into two subgroups, ubit telu (meaning ubit three) and ubit empat (ubit four.) In ubit telu, the composite melody spans three adjacent scale tones, with the polos and sangsih sharing the middle tone and each controlling one of the other two alone. In ubit empat, the polos part is the same as it would be in ubit telu, but the sangsih, rather than sharing one note, takes the next two adjacent tones, making a four-note span. The composite melody created is the same, featuring the repeated three-note ascending or descending units characteristic of ubit-ubitan, as may be seen in Fig. 4.32 below. The overall feel of the two kotekan types, however, is very different: while, in ubit telu, there are unison sounds where the two components coincide, in ubit empat, in entirely different places, there is the sound of a kempyung. In both, the parts are syncopated and coincide at irregular intervals. In Fig. 4.32, an ubit telu and similar ubit empat line are shown above a pokok melody, with some of the ascending and descending three-note units separated into boxes for clarity:
In all of the kotekan examples explored thus far, I have employed only one style of kotekan in a given cycle or musical example – a full cycle of norot, for instance, or a full example of ubit telu. And, while in practice, a single style of elaboration may be used in isolation of the other types – particularly in the case of norot, which is most often used without the combination of elements from other styles – each kotekan form may be combined, in a given cycle, with others “to form a longer and more complex figuration. Often different kotekan forms follow one another in quick succession and are used as building blocks to create extremely elaborate sections within a composition.”

In the following example, elements of ubit empat, ubit telu, and nyog cag are employed:

Figure 4.33. Gangsa kotekan combining ubit telu, ubit empat, and nyog cag figuration over a pokok line.

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65 Vitale, 1990: 11. Italics are mine.
66 Defined in Chapter three.
As mentioned, this technique of kotekan-form combination is more rarely used in norot, perhaps because the characteristic shape of norot, discussed in the opening paragraphs of chapter two, gives such a different feeling from other kotekan types that combination seems less appropriate. In his reyong norot figuration, however, Alit deems it acceptable to occasionally “borrow” single cells of ubit-ubitan figuration for his norot realizations. There do appear to be strict limits, probably unconscious, as to when he enacts this substitution.

In the deviational categories explored above, the specific placement of the two-beat cell in a given cycle seems to have little effect on its variations. For instance, the dong to ding pokok shift occurring just after gong in Kebyar Jaya Semara (beats 8-2), seems to have no more or less freedom to use suspensions or delayed pokok tone unisons than any other dong to ding shift in particular, or any 1-0 pokok movement in general, regardless of where it lies in the cycle. The temporary substitution of an ubit-ubitan style elaboration in reyong norot figuration is the one very important exception to this rule. These substitutions occur only before a “cadence” — the cell leading to a gong stroke, for instance, or, for a weaker cadence, the lead-up to a new jegogan note — never on the cell directly after a jegogan or gong tone. It is not entirely clear why this limitation exists, but it is possibly because of the contextual associations of the two kotekan types — while norot is sweet, ubit-ubitan is strong. Ubit-ubitan, therefore, may simply seem to a Balinese musician to be a more appropriate form of elaboration for a strong moment in the cycle, and therefore, a common cadential formula. The fact that these ubit-ubitan patterns interlock more strictly than the other reyong norot patterns explored above — and are therefore more predictable — might also increase the desire to employ them at structurally important junctures in the music.

There seem to be further limitations, still, on this deviational category. Alit only uses ubit empat substitution for cadential pokok shifts between adjacent scale tone pitch classes — the 1-0, as in a deng to dong shift, and the 4-0, as in a dong to deng shift. He never once employs the technique for a ngubeng (0-0) section of a melody, nor does he employ it in a 2-0 or 3-0 majalan shift. In addition, while ubit-ubitan composite melodies have several different possible shapes depending on the kinetic quality of the pokok line and the desire of

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68 Because of the discrepancies in the pokok melody of Oleg, explored in Fig. 1.14, Alit may be said to use this form of deviation in a 3-0 (u-i) shift. Using Alit’s variation of the Oleg pokok melody, however, and not the widely accepted Balinese version, this 3-0 cell is in fact a 4-0 (a-i) cell, and therefore an appropriate place for
the composer, those cadential figuration borrowed from the *ubit empat* vocabulary to complement Alit's *norot* realizations consistently follow one formula only. In this formula, one of the two components plays a */1-0-1_0-1_0// figuration, while the other interconnects, leading to the note '0' with */4_3-4_3-4//, as in the *dang* to *ding* shift in Fig 4.34, which displays *ubit-ubitan* figuration played by interlocking *ponggang* (position 3) and *pemetit* (position 4) parts. Again, the three-note ascending units are boxed for clarity:

![Diagram 4.34](image)

*Figure 4.34. Interlocking *ubit empat* figuration #1 - *ponggang* and *pemetit* (a-i).*

*Ubit-ubitan* figuration may be realized with any two adjacent positions on the *reyong* interlocking with one another. In Fig. 4.35, a *dang* to *ding* shift, the *ponggang*, this time, takes the */1-0-1_0-1_0// figuration above, and interlocks with the *pengenter* (position 2) below it:

![Diagram 4.35](image)

*Figure 4.35. Interlocking *ubit empat* figuration #2 - *ponggang* and *pengenter* (a-u).*

In cadential *pokok* shifts between adjacent scale tone pitches - 1-0 and 4-0 - Alit tends to use *ubit empat* substitution as frequently as he does strict *norot* figuration. The cell

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69 See Tenzer, 2000: 225-8 for 48 different ngubeng *ubit-ubitan* figuration and 12 different *majalan* ones.
leading to the kemong stroke in Oleg, for instance, is a 1-0 shift from dang to dung, as is the cell leading to gong. In almost fifty of the over one hundred variations played on the ponggang (position 3) – where a strict adherence to the template may have been //u-a-u-a/u-u-a-u//, or //0-1-0//0-0-1-0// //l-t-l-t-t-t-1// – he uses the ubit empat //a-u-a _/u-a _ u//, or //1-0-1 _/1-0 //0//0-1-0// //l-t-1-t-t-t// //a-u-a_u_a_u//, or //1-0-1 _/1-0 _ u//, or //1-0-1 _/0-1 _ 0// //l-t-1-_// //a-u-a_u_a_u//, or //1-0-1 _/0-1 _ 0// //l-t-1 know u_s //template:

\[
\begin{align*}
\text{ponggang} &: \begin{array}{c}
\text{solfege: (} /u a u a/ u a u/
\text{numbers: (} /0 1 0 1/ 0 0 1 0/
\end{array} \\
\text{pokok} &: \begin{array}{c}
\text{solfege: (a) } u \\
\text{shift: 1-0}
\end{array}
\end{align*}
\]

\[\text{Figure 4.36. Ubit empat substitution #1 – Oleg Tumulilingan, ponggang (a-u).}\]

In the pengenter (position 2) of the same cells, he uses some variation on the complementary //4 _3-4/_3-4 // //a-u-a_u_a_u//, or //1-0-1 _/1-0 //0//0-1-0// //l-t-1-_// //a-u-a_u_a_u//, or //1-0-1 _/1-0 _ u//, or //1-0-1 _/0-1 _ 0// //l-t-1 know u_s //template:

\[
\begin{align*}
\text{pengenter} &: \begin{array}{c}
\text{solfege: (} /e o e/ o e /u
\text{numbers: (} /4 3 4/ 3 4 /
\end{array} \\
\text{pokok} &: \begin{array}{c}
\text{solfege: (a) } u \\
\text{shift: 1-0}
\end{array}
\end{align*}
\]

\[\text{Figure 4.37. Ubit empat substitution #2 – Oleg Tumulilingan, pengenter (a-u).}\]

70 It may seem strange that Alit played the ubit-ubitan figuration so many times for the ponggang and relatively so few for the corresponding pengenter part when these two realizations imply one another so strongly. There are several reasons for this discrepancy, the most significant being that the ponggang realizations that I recorded were played on a different day from the corresponding pengenter ones. The particular ponggang figuration that Alit chose to teach me on the first day we worked on Oleg contained this ubit empat substitution. In the following lesson, when he was teaching me pengenter figuration, he did not elect to employ ubit empat substitution. Perhaps he just had different feeling on a different day. It is also possible that, when playing the pengenter realizations, he was imagining himself most often interlocking with a penyorog player below him as opposed to the ponggang player above him. This, of course, is one of the drawbacks of the laboratory setting in which I did my research – it was difficult to get an idea of which realizations in the penyorog, for instance, could be interlocked, in Alit’s mind, with a given pengenter realization.
The cell leading to the first *kempur* on beat four of *Oleg* is often realized in a similar manner on all four positions on the *reyong*. However, this cell is something of a special case – as mentioned in section 1.4 (Fig.1.16), although Alit realizes the *pokok* melody as (u)-a-i-a-u-c-o-a-u, it is also commonly played and known by Balinese musicians as (u)-u-i-a-u-c-o-a-u:

![Alit's pokok solfege](image1)

**Figure 4.38.** *Pokok* melodies for *Oleg Tumulilingan*, #1 (Alit’s) and #2 (commonly played).

The only difference between these two melodies is the second *pokok* tone – a *dang* as Alit played it for me, but a *dung* by most Balinese standards – yet this makes a great deal of difference in *norot* figuration, as is demonstrated in the next several musical examples. The first two *pokok* shifts may be considered to be either 4-0 (u-a) followed by 4-0 (a-i), or 0-0 (u-u) followed by 3-0 (u-i), and in his various realizations of this melody, Alit makes use of both of these contours, most frequently the second, to shape varying *norot* figuration. The first contour, with the a-i shift in beats 2-4, is adhered to with such *penyorog* (position 1) realizations as //a-a-e-e/u-u-a-a//, or //?-t-l-h/h-h-h-h//, whose deviations are explained as a delayed *pokok* unison in the first subdivision and the preparation for another delayed unison in the eighth:

![penyorog template](image2)

**Figure 4.39.** Complex deviant cell #10, containing delayed *pokok* unison and preparation for delayed *pokok* unison, elaborating on Alit’s version of *Oleg Tumulilingan*’s *pokok* melody – *penyorog* (a-i), with template.
The *pengenter* (position 2) part, too, does occasionally follow this first 4-0/4-0 contour with such realizations as //e _ e _/i-i-o-i//, which may be analyzed as //2 _ 2 _/0-0-1-0//, or //l _ l _/t-t-t-t//:

![Diagram of *pengenter* solfege numbers]

Most often, however, Alit uses the second, 0-0/3-0 contour, with the u-i shift in beats 2-4, as his *pokok* guideline for *norot* realizations of this cell, and, when he does, he very frequently uses *ubit empat* substitution. In the *pememiti* (position 4) part, 50 of his 67 variations follow the //1-0-1 _/0-1 _/0// formula, realized in this case as //o-i-o _/i-o _/i//, as do 55 of his 61 *pengenter* (position 2) variations. Forty-one of his 79 *penyorog* (position 1) variations follow its complementary //4 _ 3 4// _/3-4 _//, or //a _ u-a/_ u-a _// line, as do 34 of his 55 *ponggang* (position 3) variations. Fig. 4.39 below shows both the *penyorog* and *pengenter* lines notated separately, as well as the interconnecting *ubit empat* realization of all four parts together:

![Diagram of *pokok* and *pengenter* lines]

![Diagram of *penyorog* and *pengenter* lines]

**Figure 4.40.** Template-abiding cell elaborating on Alit’s version of Oleg Tumulilingan’s *pokok* melody — *pengenter* (a-i).

**Figure 4.41.** *Ubit empat* substitution #3 (*penyorog*) and #4 (*pengenter*), and full interlocking *Ubit empat* substitution — Oleg Tumulilingan (u-i).
4.7 Reverse Norot

When I began analyzing Alit’s norot figuration, I discovered many instances in which two variations would be almost identical, but with one or two notes of one variation, most often in the first and third subdivisions, moved up one scale tone. For instance, several times Alit changes a template-abiding //0-i-o-i/e-e-i// or //4-3-4-3/0-3-0// figuration in a ding to deng (3-0) pengenter (position 2) shift in Ongkek-Ongkek Ongkir, into a nonstandard //e-i-e-i/e-e-i-e//, or //0-3-0-3/0-0-3-0// cell:

The deviant deng, on the first and third subdivisions of the cell above, do not seem explicable; they alter none of their surrounding notes, are not borrowing from another style of elaboration, and are not resolved through note repetition, as are the suspensions and anticipations explored above. Initially, I assumed that Alit did this note-switching simply for variety, with no cares for the template I had so carefully constructed to explain his inherent system. This is certainly one possible explanation – these categories, after all, are an analyst’s fabrication, nothing more. However, I felt that my template and deviational categories seemed to be able to explain many of Alit’s norot realizations, and so sought another more organized way to explain these particular deviations. In a language with inherent rules, the most important role of the analyst, perhaps, is to describe that language in any way that makes sense or seems relevant to him/her. With this in mind, I discovered the technique of reverse norot.

The concept of reverse norot is that the cell is realized as if the musician, instead of alternating between the current pokok tone and its scalar upper-neighbor, plays between the pokok tone and its lower-neighbor. Thus, a ding to deng cell realized in strict norot as (i)/o-i-o-i/e-e-u-e// or (3)//4-3-4-3/0-0-1-0//, would be played in reverse norot as
(i)//a-i-a-i/e-e-u-e//, or (3)//2-3-2-3/0-0-1-0//, with the ding’s lower neighbor dang (2)
replacing its upper neighbor dong (4):

Figure 4.43. Hypothetical reverse norot figuration (i-e), with template.

In the example from Ongkek-Ongkek Ongkir cited above, then, the nonstandard
//e-i-e-i/e-e-i-e//, or //0-3-0-3/0-0-3-0// cell analyzed in strict norot as //?-t?-t-t-l-t//
becomes, in reverse norot, a template-abiding //h-t-h-t/t-t-l-t//, because deng is the upper
kempyung of the reverse norot template note dang:

Figure 4.44. Reverse norot substitution #1 – Ongkek-Ongkek Ongkir, pengenter (i-e), with template.

Thus, the template-abiding notes for subdivisions one and three, instead of being
dong and its two kempyung, deng and dang, become dang and its kempyung, deng and dong:

Figure 4.45. Reverse norot and polos template notes and kempyung (i-e shift).

It will be noted that two of the three template-abiding tones – the dang and the dong –
are the same in both cases, leaving only dung to be replaced, as it were, by deng. This is the
most interesting feature of reverse norot – that, of the two components interlocking in reverse

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**Notes:**
- ding = (2)
- dong = (4)
- dang = (2)
- deng = (4)
- Polos template: 
  - solfege: (i)//a-i-a-i// numbers: (3)//2 3 2 3 0 0 1 0//
  - solfege: (i)//o-o-i// numbers: (3)//4 3 4 3 0 0 1 0//
- Reverse norot template:
  - solfege: (i)//a-i-a-i/e-e-u-e// numbers: (3)//2 3 2 3 0 0 1 0//
  - solfege: (i)//o-o-i/e-e-u-e// numbers: (3)//4 3 4 3 0 0 1 0//
- Figure 4.43: Hypothetical reverse norot figuration (i-e), with template.
- Figure 4.44: Reverse norot substitution #1 – Ongkek-Ongkek Ongkir, pengenter (i-e), with template.
- Figure 4.45: Reverse norot and polos template notes and kempyung (i-e shift).
norot, only one will appear to be playing a deviant note. Therefore, the pengenter musician playing Ongkek-Ongkek Ongkir, for instance, may alternate freely, in a ding to deng shift, between the strict /o-i-o-/e-e-o-e// or /4-3-4-3/0-0-4-0// norot figuration and the /e-i-e-/e-e-i-e//, or /0-3-0-3/0-0-3-0// reverse norot cell, without affecting the players around him/her. In both cases, the first position penyorog below may play, as Alit does on a handful of occasions, a template-abiding //a _ a _//e-e-u-e//, or //2 _ 2 _/0-0-1-0//. The only thing that is truly altered, therefore, is the harmonic flavor of the cell, and this, only, on the weak subdivisions of the beat. In reverse norot, dang is complemented with its upper kempyung deng, as opposed to being the complementary tone for the template note dong:

In the strict norot figuration in Fig. 4.46 above, the penyorog //a _ a _//e-e-u-e//, or //2 _ 2 _/0-0-1-0// line may be analyzed as //h _ h _/t-t-t-t//. In the reverse norot realization, the dang in the penyorog part becomes the template note, not the upper kempyung, and the cell may then be analyzed as //t _ t _/t-t-t-t//.

Another example of this style of nonstandard note use may be found in the same piece, in one of Alit's fifteen penyorog variations of the deng to ding (2-0) shift in beats 2-4. In a strict polos norot template, a deng to ding cell is realized //u-e-u-e/i-i-o-i//; a reverse norot template would be //o-e-o-e/i-i-o-i//.
While Alit generally realizes the *penyorog*’s *deng* to *ding* shift in *Ongkek-Ongkek Ongkir* with a template-faithful //u-e-u-e-u-a _// / (//3-2-3-2//3-2-3//3-4 _//), or with an anticipation-filled //e-e-a/e-e-a _// / (//2-2-4-4/2-3-4 _//), he once uses the reverse *norot* technique. Using *dang* as the upper *kempyung* of the reverse *norot* tone *dong*, he realizes this cell as //a-e-a _/u-u-a _//, or //4-2-4 _/3-3-4 _//:

![Diagram of reverse norot template](image)

**Figure 4.47.** Reverse *norot* template (e-i), with strict *norot* template.

Many other instances of reverse *norot* are more difficult to identify when the four *reyong* positions are isolated, as they were in my research. This is because, in some cases, the deviant reverse *norot* tones lie at the outer edge of one player’s range, and are, therefore, followed by rests, assuming interlocking with the part above. For instance, in the *pengenter* (position 2) realization of the *ding* to *deng* shift in *New Composition*, Alit twice plays //e _ e _//o-e-i _//, or //0 _ 0 _//4-0-3-3//, which may be analyzed as //? _ _//t ? t-1-h _//. This figuration is juxtaposed with a possible template-abiding //o _ o _//e-e-i _//, or //4 _ 4 _//0-0-3-3// cell in Fig. 4.49:

![Diagram of reverse norot substitution](image)

**Figure 4.48.** Reverse *norot* substitution #2 – *Ongkek-Ongkek Ongkir, penyorog* (e-i), with template and similar deviant cell with anticipations.
The nonstandard tone in the fifth subdivision of the deviant cell in Fig. 4.49 above is a *ngubeng-majalan* switch; those in the first and third subdivisions are justified by the reverse *norot* theory. Had the *pengenter*’s range been extended to include the *dung* and *dang* above, Alit may, indeed have played /e-u-e-i/i, or //0-1-0-1//, or //0-1-0-1//, the reverse *norot* variation on //2-1-2-1//, or //2-1-2-1//:

Figure 4.49. Reverse *norot* substitution #3 – *New Composition, pengenter* (i-e), with template.

However, since the *dung* is out of its range, we must look at the *pengenter* part as it interlocks with the *ponggang* above in order to get the full effect of the reverse *norot* technique:

Figure 4.50. Hypothetical reverse *norot* substitution – *New Composition, pengenter* (i-e), with template.

Figure 4.51. Interconnecting reverse *norot* substitution – *New Composition, pengenter* and *ponggang* (i-e).
Reverse norot may also be used in the second half of a cell, altering the majalan norot template end unit from /0-0-1// to /0-0-4-0//. In a ding to deng shift, for instance, the polos reverse norot template would not be /o-i-o-i/e-e-u-e//, or /4-3-4-3/0-0-1-0//, but /o-i-o-i/e-e-o-e//, or /4-3-4-3/0-0-4-0//. In this scenario, the three allowable notes in the seventh subdivision, instead of being dung (1), its lower kempyung ding (3), and its upper kempyung dong (4), become dong (4), its lower kempyung dung (1), and its upper kempyung dang (2). As in the reverse norot in the first half of the cell, then, two allowable tones – the dung (1) and the dong (4) – remain, and the ding (3) is replaced, as it were, by dang (2).

In the dung to ding shift in New Melody, Alit uses reverse norot in the second halves of three of his pengenter (position 2) realizations, as in /o-o-e/e-i-e //, or /1-1-2-2/0-0-2 //. With the closest adherence to the template, /l-h-h/t-t-t //, being /o-o-e/e-i-o //, or /1-1-2-1/0-0-1 //, Alit deviates in two places. The nonstandard deng (2) in subdivision four is a suspension. The deviant deng in subdivision seven demonstrates reverse norot technique, being the upper kempyung to the reverse norot template note dung:

![Figure 4.52. Second half reverse norot substitution – New Melody, pengenter (u-i), with template.](image)

Alit also combines second half reverse norot with other methods of deviation, such as advanced pokok tone unisons. In the various ding to deng (3-0) shifts in Ongkek-Ongkek Ongkir, for instance, Alit twice realizes the penyorog (position 1) line as /a-e-a-a/e-a-c//, or /2-0-2-2/0-2-0-0//. This cell deviates from a template-abiding /a-e-a _e-e-u-e//, or /2-0-2 _o-0-1// figuration in subdivision four, with a suspension, and in subdivisions six and seven, through a combination of reverse norot and advanced pokok tone unison techniques. The advanced pokok tone unison shifts the new pokok tone’s upper neighbor note dung from subdivision seven to subdivision six; the reverse norot technique alters the shifted upper neighbor dung to a lower neighbor dong, and Alit uses the upper kempyung,
dang, of this lower neighbor dong. Moving theoretically step-by-step through this rather complex transformation, therefore, we begin in subdivisions five through eight with a template-abiding /0-0-1-0// or /e-e-u-e// end unit, shift it through advanced pokok tone unison to /0-1-0-0// or /e-u-e-e//, change deng's upper neighbor dang to a lower neighbor dong through reverse norot: /0-4-0-0// or /e-o-e-e//, and, lastly, use the upper kempyung of dong (4), making a /0-2-0-0// or /e-a-e-e// end unit:

As mentioned above, this reverse norot concept is, like all the other categories of deviations explored, my own construct. Balinese musicians do not think of norot figuration in these ways. In the creation of my next two categories, which explore decreases in underlying pokok motion, and the intensification of the underlying pokok motion, however, I have blended my own theories with the existing Balinese musical theory that I have read about or been taught by Alit.

4.8 Decreases in the Underlying Pokok Motion

In chapter two, we explored the notion of kinetic qualities in the pokok line: the Balinese categories of the ngubeng or static quality, and the majalan or moving quality. This next category of nonstandard note use explores ways in which Alit deviates from the master template in order to temporarily create a static or ngubeng feel in a kotekan line elaborating on a majalan pokok line. This is a variational technique that Alit described to me once, but that I did not truly understand until I closely studied my transcriptions of his norot figuration.71

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71 In this conversation with Alit, he explained that the pengenter (second position) player could elaborate for three or four beats in a majalan melody on only the notes ding and dong, or could make use of the deng above,
An examination of two consecutive variations of beats 24-32 in Alit’s pengenter (position 2) realizations of Ongkek-Ongkek Ongkir will demonstrate the concept of a ngubeng elaboration for a majalan melody. The first variation adheres almost perfectly to the general template – combining polos template notes, kempyung, and rests – though with some kendang pattern substitution, and a delayed pokok tone unison on the first subdivision of beat 30. The second displays ngubeng elaboration between beats 24-28, and again, in a different, less obvious way, between beats 28-32:

Figure 4.54. Decrease in underlying pokok motion #1 – Ongkek-Ongkek Ongkir, pengenter, with template.

In the first example of Fig. 4.54 above, Alit prepares each pokok tone in stylistically explicable ways. In the ding to dong cell in beats 24-26, for instance, the deng in the sixth subdivision breaks from the //o-i-o-i/ ngubeng alternation, as majalan cells do, thus preparing the new pokok tone dong using kendang pattern substitution (though with a rest in subdivision seven.) The equivalent beat in the second example, without the third pitch deng as an anticipation of a new pokok tone, is clearly preparing for a repetition of the pokok tone ding. Similarly, in beats 28-30 of this second example, there is no preparation for the new pokok tone dung. Instead, the pengenter line is clearly leading, again, to deng, the upper kempyung of the prevailing pokok tone dang.

also, for variety. While he gave me, in this slightly confusing statement, some support to justify my theories about ngubeng and majalan motion in the kotekan, he did not explain this style of deviational freedom in the theoretical terms that i will be using. For him, it was simply another manner of varying, of making a line more – or less – wayah.
In essence, what Alit has done in this second realization – how he has achieved ngubeng elaboration – is to ignore the pokok tones on beats 26 and 30. In claiming that Alit “ignores” a pokok tone, I am actually saying that he does not prepare for it, does not lead up to it with a three-note majalan anticipation, for instance. In both cases, as seen above, the full first two beats of the four-beat ngubeng segments are perfect ngubeng norot (0-0) templates, with consistent one-to-one note alternation between the prevailing pokok tone and its scalar upper neighbor. Alit prepares for the next pokok tones, those on beats 28 and 32, in stylistically explicable ways. For all intents and purposes, therefore, it is as if these two pokok tones, the dong on beat 26 and the dung on beat 30, do not exist. Alit thus effects a perceived decrease in the underlying pokok motion. He is not elaborating on the actual pokok line:

actual pokok line i - o - a - u - i
beats: 24 25 26 27 28 29 30 31 32

Figure 4.55. Actual pokok line #1 – Ongkek-Ongkek Ongkir, pengenter, beats 24-32.

but on the perceived line notated below:

perceived pokok line i - (i) - a - (a) - i
beats: 24 25 26 27 28 29 30 31 32

Figure 4.56. Perceived pokok line #1 – Ongkek-Ongkek Ongkir, pengenter, beats 24-32.

Another example of this decrease in the underlying pokok motion may be found in a large portion of Alit’s penyorog (position 1) realizations of Oleg’s beats 8-12, a dung-deng-dong pokok progression. He does, in some variations, realize these beats with template-faithful figuration, such as //a-u-a-\(u\)/a-a-u-e//u-e-u-e//u-a-i_/\(u\)/, which may be analyzed (with deng as note ‘0’ in the first cell and dong as note ‘0’ in the second) as \(1/2-1-2-1/2-1-2-1-2-1/2-3-4\)_://a-u-a-\(u\)/a-a-u-e//u-e-u-e//u-a-i_/\(u\)/, or \(1/2-1-2-1/2-1-2-1-2-1/2-3-4\)_://t-t-t/t/l-l-t/t/t-t-t/t/l-h-h_/\(t\)_://

Figure 4.57. Template-abiding passage – Oleg Tumulilingan, penyorog (u-e-o).
Very frequently, however, he basically ignores the pokok tone deng in the u-e-o progression, elaborating in that segment, instead, on a u-(u)-o pokok line. In both of the following examples, Alit is elaborating on the pokok tone deng for the first three beats of the four-beat segment cited; in the fourth beat, he prepares for the new pokok tone dong to be played by the pengenter player above him:

\[\text{solfege: (u)/}_u-e/u/_{u-e}/_{u-e}/_{u-e}/_{u-e}/_{u-e}/_{a-i}/_{a-i}\]

Figure 4.58. Decreases in underlying pokok motion #2 and #3 – Oleg Tumulilingan, penyorog (u-e-o).

In the first example of Fig 4.58 above, Alit accentuates the static quality of his line by repeating the same three-note motif on each of the first three beats, before leading to the new pokok tone dong on the fourth beat with an ascending a-i progression. His \/_u-e/_{u-e}/_{u-e}/_{u-e}/_{u-e}/_{u-e}/_{u-e}/_{u-e}/_{a-i}/_{a-i}/ line follows a perfect \/_1-0-1-0/1-0-1-0/1-0-1-0/ ngubeng norot contour, but adding kempyung and rests, to make \/_0-4-0/_{0-4-0}/_{0-4-0}/_{0-4-0}/. In the second example, Alit uses both template and kempyung notes, making the penyorog line itself seem slightly less static though is it still elaborating on a perceived ngubeng pokok u-u line:

\/_u-e/_{u-e}/_{u-e}/_{u-e}/_{u-e}/_{a-u}/_{a-u}/_{a-u}/, or \/_0-4-0/_{0-4-0}/_{0-4-0}/_{0-4-0}/. This second example again leads to the dong in beat 12 with an ascending progression: u-a-i.

As previously mentioned, the first three pokok tones of Oleg, u-a-i, may also be realized u-u-i, and, therefore, very frequently display this ngubeng kotekan motion over a majalan pokok line. In the case of Oleg, however – a well-known piece most often begun with a u-u-i pokok progression – the reasons for this ngubeng kotekan motion are more far-reaching than simply elaborative variety. They state that, while Alit has chosen to place a dang on beat two of the pokok line, it is, in fact to be generally considered a passing tone.
4.9 Intensification of the Underlying Pokok Motion

Just as Alit may imply a decrease in the underlying pokok motion through the use of ngubeng-style reyong elaboration over a majalan melody line, so, too, may he increase or intensify the underlying pokok motion through nonstandard note use causing increased pokok tone preparation activity. The best examples of this intensification of motion may be found in beats 6-8, leading to gong, in Kebyar Jaya Semara. It is logical that this intensification should be so consistently used directly before gong, as this is the point in any gamelan piece with the most frequent incidence of increased motion, whether it be intensified kinetically or through increased elaborative complexity. For instance, an underlying pokok melody will often begin ngubeng and become increasingly more majalan, or kinetic, as it approaches gong; such a melody, of course, returns to a more static feel just after gong.

In the deng to dong shift on beats 6-8 of Kebyar Jaya Semara, Alit occasionally realizes the penyorog (position 1) part with a //u-e-u/u-a−1_e_e//, or //2-1-2-1/2-3-4 _// cell, which adheres perfectly to the template. Most often, however, he realizes it with a deviant //a-u_a_/u-a−1_e_e//, or //3-2-3/2-3-4 _// cell:

![Figure 4.59. Increase in the underlying pokok motion #1 – Kebyar Jaya Semara, penyorog (e-o), with template.](image)

In the first example shown in Fig. 4.59 above, the first three subdivisions are all nonstandard notes. Unlike the u-e-u unit in subdivisions 1-3 of the second example, the template, which leads to the four note ascending progression e-u-a−1_e_e_, the a-u-a unit in the first example seems to be leading to a ding played, in subdivision four (coinciding with the neliti tone on beat seven), by the pengenter musician above. It may be said that, just as Alit does not elaborate on the actual pokok lines in Figs. 4.54 to 4.56, but on a perceived line with decreased intensity of motion, so too is he elaborating on a perceived line, this time more
dense than the actual pokok line, in beats 6-8 of Kebyar Jaya Semara. He is not elaborating on the actual pokok line:

actual pokok line  (o) – i – a – e – o
beats: (16) 1 2 3 4 5 6 7 8

Figure 4.60. Actual pokok line #2 – Kebyar Jaya Semara, penyorog.

but on the perceived line:

perceived pokok line (o) – i – a – e i o
beats: (16) 1 2 3 4 5 6 7 8

Figure 4.61. Perceived pokok line #2 – Kebyar Jaya Semara, penyorog.

A quick examination of the pengenter (position 2) realizations of the same cell reveals that close to 50% of them contain a ding in this fourth subdivision, as in

/0-i _ i/o-e _ o//, or //0-4 _ 4/0-1 _ 0//:

Figure 4.62. Increase in the underlying pokok motion #2 – Kebyar Jaya Semara, pengenter (e-o).

This ding in the fourth subdivision does adhere to the template and may, therefore, be of little note. However, the consistency with which Alit rests in the penyorog figuration after a-u-a, thereby turning listener attention to the interlocking ding in the pengenter above, implies a weak cadence point leading to ding that does not exist in the interlocking of the template-abiding //u-e-u-e/u-a-i_e _ // cell with the same pengenter realization:
The existence of this pokok motion intensification may be supported by the fact that the penyacah note for the seventh beat in question is, in fact ding. The full penyacah melody is notated with the pokok melody in Fig 4.64 below:

Another example of this intensification of the underlying motion may be found in Alit’s ponnang (position 3) variations on the deng to dang shifts in New Composition. While most of his realizations of these cells follow a template-abiding //u _ u _/a-u-a/, or //4 _ 4 _/0-0-4//, three of them break from the template with a //a-u-a _/u-a-u//, or //0-4-0 _/4-0-4// configuration. The deviation on the eighth subdivision is a preparation for a delayed pokok tone unison in the following cell; that in the fifth is a ngubeng-majalan switch; the deviations in the first three subdivisions seem to be leading, as in the Kebyar Jaya Semara example above, to a ding in subdivision four. Examination of the coinciding pemetit parts reveals an almost uniform use of ding in this fourth subdivision, as in Alit’s //o-i _ I _ o-i //, or //2-1 _ 1 _/2-1// pemetit configuration. This consistent use of ding, in combination with the a-u-a preparation for ding in the ponnang line, implies an intensification of the perceived pokok motion:
4.10 Concluding Remarks and Unexplained Reyong Norot Figuration

I came to this research in an effort to understand reyong norot figuration – the one aspect of gamelan gong kebyar whose musical language still completely eluded me after three years of study. Through an exploration of templates and kempyung, and the creation of a handful of deviational categories – delayed and advanced pokok tone unisons, suspensions and anticipations, ngubeng-majalan switches and kendang pattern substitutions, ubit empat substitutions, reverse norot, and the decrease or intensification of the underlying pokok motion – virtually all of Alit’s extremely varied reyong norot figuration can now be analyzed and categorized quite easily.

Despite this fact, there are still some specific realizations that do not fit into my theoretical mold. Perhaps this should be disheartening to me; on the contrary, I find it strangely satisfying to know that, although I could explain almost everything that my teacher played for me, and that my analytical model, therefore, has some merit in leading toward the deeper understanding of reyong norot figuration that I was seeking, the musical language will still occasionally fall outside of the theoretical constraints that I have created in an effort to understand it. The existence of these more enigmatic realizations leaves room both for further study with a wider range of Balinese musicians, and for a deeper look into existing Balinese ethnotheory, perhaps unknown to my own teachers; it also leaves room for the
creative license of the musician that cannot be categorized. Below is a list of a handful of such examples, accompanied by the rather unlikely theories that I have created in an effort to explain them.

In *New Composition*, Alit once realizes the second position *pengenter*’s *dang* to *deng* shift in beats 30-32 as //o-i-o-l/e-e-i-i//, or //4-3-4-3/0-0-3-3//. With the closest possible adherence to the template being //i-a-i-a/e-e-i-i//, or //3-4-3-4/0-0-3-3//, this deviant cell may be analyzed as //?--?--?--?/t-t-l-h//:

![Figure 4.66. Inexplicable deviant norot cell #1 – New Composition, pengenter (a-e), with template.](image)

One possible explanation for the deviation in Fig. 4.66 above is that Alit has simply switched the positions of the *ding* and *dong* tones in the first half of the cell for reasons of variety. This, however, seems too random an act for a man whose extremely varied “improvisations” may actually be calculated in logical ways. Another explanation is that Alit is playing on the similarity of the *pokok* melody between beats 40(gong)-16 and that between beats 16-32, which are completely identical except for the last two cells in each – a *dang-ding-deng* progression in the first case and a *dang-dang-deng* progression in the second.

![Figure 4.67. Pokok melody for New Composition beats 40(gong)-32.](image)

This deviant *dang* to *deng* *pengenter* cell leading to beat 32 would actually be a perfect template-abiding cell in the corresponding *ding* to *deng* cell leading to beat 16. It is
possible that Alit is commenting on the similarity of the two lines by making their elaborations interchangeable. It is also possible that he momentarily forgot the contour of the melody he had just written while elaborating on it at high speed, and mistook a dang-dang-deng progression for a dang-ding-deng progression. And, again, there may be yet another explanation that I have not discovered.

There are several instances in which Alit plays a single nonstandard note, most often in the fourth subdivision, that is a Kempyung of the note that came before it, as in the penyorog (position 1) part for the dong to dung shift in New Melody that Alit realizes fourteen times as either //a-a-a-e/ a-e _// — //1-0-1-4/ 1-4 _//, or //a_a e/u-a-e _// — //1 _1-4/0-1-4 _//. The nearest template abiding cell — //a-u-a/_ u-e _//, or //1-0-1-0/_ 0-4 _// — is notated beside both of these deviant cells in Fig 4.68:

The nonstandard deng in subdivisions four of the deviant cells above, like the deviant tones in reverse norot, do not alter any of the notes surrounding them, do not borrow from another style of elaboration, and are not resolved through note repetition, like suspensions and anticipations. In these cases, however, reverse norot is not a plausible explanation, and the only remotely likely justification — still fairly far-fetched — is that these tones are, in fact, a suspension of the third subdivision, but that this suspension is obscured by the fact that the nonstandard tone is a Kempyung, not a direct repetition, of the template note preceding it.

The notes in the sixth and seventh subdivisions may be considered to be a kendang substitution, changing a /0-0-1-0// end unit to /0-1-1-0//, but, again, with a Kempyung (4) replacing the repeated note ‘1’ in subdivision seven.

Some of Alit’s variations can be squeezed into my analytical model but do not fit into it easily and, therefore, require further explanation. For instance, the two // a-a-u// a-a-u _//,
or // 1-1-0/1-1-0 // ponggang (position 3) realizations of the dong to dung New Melody cell, also cited in Fig. 4.68, may be said to be complex deviant cells, combining anticipation, kendang pattern substitution, and rests in their second halves. The deviant dang (1) in the fifth subdivision may be said to be an anticipation of the dang in subdivision six, which, itself, is a deviant note, assuming a /0-1-0-0// advanced pokok tone unison replacing the template /0-0-1-0// in subdivisions five through eight:

Figure 4.69. Inexplicable deviant norot cell #4 – New Melody, ponggang (o-u), with template.

There are a few techniques used by Alit that I have not mentioned at all in the above analyses. One is his use of thirty-second-notes in reyong norot figuration. Occasionally, Alit will play two notes in the space of one sixteenth-note subdivision. For example, in Fig. 4.70 below, a dang to ding to deng passage from New Composition, the pemetit (position 4) is realized twice as //e-e-i/o-i _//. In this cell, the thirty-second-notes, whose solfege letters are notated using underlined superscript font, appear to be a sort of double passing tone, leading in step-wise motion from the ding in the eighth subdivision of the first (a-i) cell, to the dung in the second subdivision of the second (i-e) cell72:

Figure 4.70. Cell using thirty-second-notes #1 – New Composition, pemetit (a-i-e).

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72 This passage also contains several other deviant tones, which will not be discussed here.
Thirty-second-notes are also used as upper- and lower-neighbor tones, as in the dang to dung shifts in Oleg, which Alit realizes four times on the penyorog (position 1) as //a-a-u-e// u-e-e//, or //1-1-0 4// 0-4-4//. With the closest adherence to the template being //u-a-u-e/u-e-e-u//, or //0-1-0 4// 0-4-0//, we may observe three nonstandard tones. The first subdivision deviance is a delayed pokok tone unison, while the eighth is a preparation for another delayed pokok tone unison in the subsequent cell. The thirty-second-note deng in the weak (second) half of subdivision five may be analyzed simply as a lower-neighbor to the template note dung preceding it:

![Penyorog and Pokok Diagrams]

```
solfege: ( )//a a u e / u e u e/
solfege: ( )//u a u e / u e u e/
numbers: ( )//l 1 0 4/ 0 4 0 4
numbers: ( )//0 1 0 4 / 0 4 0 4
```

Figure 4.71. Cell using thirty-second-notes #2 – Oleg Tumulilingan, penyorog (a-u), with template.

While I am able to explain most of Alit’s thirty-second-note uses as passing-notes or neighbor-tones, and have observed that they most often occur in either the first or fifth subdivision of a cell (the subdivisions directly following neliti tones), I have not been able to determine if there are any other limits as to when these deviant notes may be employed. Further research on this topic may investigate this aspect of reyong norot figuration, and determine if there are, indeed, constraints to thirty-second-note use, as there appear to be with all other forms of nonstandard note use. It would also be interesting to determine if the musicians interlocking with those thirty-second-note variances would feel compelled to adjust their own parts to interlock with good “feeling.”

Another form of deviational freedom that I have not even touched upon here is the ultimate freedom that Alit claims to have in reyong norot figuration for a ngubeng section of the melody. He says: “when [the pokok] melody is dung and goes to dung again you can go where you want in the reyong, like, make [elaborating] melody from your heart, with your partner, because if you practice with your partner you will have the same feeling. You know
you go to dung again... you have a long way to go to dung,” and “you have more improvisation with ngubeng because [it is] very easy to feel just one note.” In the laboratory setting that I created, in which Alit did not have another Balinese musician to feel with and play off of, he did not exhibit this form of ngubeng freedom enough for me to be able to analyze it credibly. Future studies using at least two musicians simultaneously might explore aspects of this freedom to discover if it is absolute, or if, here too, there are limitations to the freedom.

Lastly, I have noted in the reyong norot figuration that Alit has taught to me in the context of the full gamelan setting that, while I am playing a template-abiding cell in the penyorog (position 1), he has taught the ponggang (position 3) player, who usually mirrors my own part, a wayah line with non-standard tones in it. At times, therefore, I will be sounding a dang while the ponggang above me is sounding dung. These notes do not appear to be considered dissonant. Further analysis in reyong norot which involved analyzing the specific interlocking variations that Alit taught to the four reyong players in a gamelan – as opposed to simply comparing the myriad of variations in isolation from one another – or recording four Balinese musicians playing simultaneously, and then playing their realizations back to them and asking where it had good “feeling” and where it did not, for instance, might shed some light on the possible limits of this style of freedom as well.

The above examples are some of the most glaring instances in which Alit’s reyong norot figuration falls outside the confines of my analytical model. Perhaps some future scholar will expand upon my own research and seek to explain what I found to be inexplicable. Perhaps these will simply remain the beautifully mysterious elements of a living musical language.

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73 Interview with Dewa Ketut Alit, April 2002.
5.1 A question of Relevance

This thesis is a purely analytical one. It contains little sociological, historical, or anthropological information, and, though a Balinese musician was integral to the research, all analysis and conclusions are from the perspective, and in the style, of a Western music analysis, fleshed out and supported by information gleaned from other such analyses. In deeply exploring one very small music-theory-based aspect of a huge Balinese musical tradition, with virtually no mention of its larger social connections, and in analyzing it in a predominantly Western, almost mathematical framework that would surely not be used, nor maybe even fully grasped by many Balinese musicians, the questions beg to be asked: what is the point of such a study? To whom is it directed? Does it have a useful, or even a valid place alongside the predominantly socio-political, anthropologically driven studies that, for Merriam and Blacking, as well as more recent scholars such as Anthony Seeger, seem to define the modern ethnomusicological canon? And can a young scholar, new to the field, presume to claim that it does?

In his assessment of the field of ethnomusicology back in 1975, Bruno Nettl – though he did, and still does support some forms of musical analysis – did not speak particularly favorably of the reductionist approach to music that I have taken here:

The notion that a musical system can be described by a rather small number of basic rules and operations in the manner of transformational grammar is [...] very attractive, but does not seem to me to have been stated with sufficiently convincing force. Some of the studies which attempt to show that music can be understood in the same terms as language seem almost to be contributions more to linguistics than to musicology or ethnomusicology, for they demonstrate the elegance of linguistic analysis but [...] do not necessarily tell us anything about the music that we do not already know intuitively from hearing it. ⁷⁴

Certainly formal analysis has not been the chosen focus of most modern ethnomusicologists. For half a century or more, now, the study of ethnomusicology has drawn influence not only from musicology, but also from anthropology, folkloristics, sociology, psychology, history, cultural studies, linguistics and philology. ⁷⁵ This branching out in ethnomusicology has been accompanied by an increase in the interdisciplinary nature of many fields. Musicology now takes much literary theory into account, and may be studied

from the angle of gender or queer studies, for instance, and the sociolinguistics branch of the field of linguistics – which has spurred, among other things, the Whorfian debate on language and culture\textsuperscript{76} – now carries increasing weight, counterbalancing Chomskyan structural linguistics in intellectual circles.

A large portion of the recent ethnomusicological studies, therefore, has focused more on the diverse elements of the history, anthropology, and sociology of the world’s musical traditions, than on the specific structural elements of the musics themselves. Many respected scholars in the field of ethnomusicology are examining music in terms of gender studies, nationalism, cultural and social identity, place and empowerment, extra-musical meanings (semiotics), the effects of modernity – political change, the rise of technology, mass media, and tourism – on a redefinition of traditions, professionalism, globalization, status, perception… all the outer concepts and contexts of music. For instance, in the last thirty years of study on Balinese music, Lisa Gold has written extensively on musical meaning in gender wayang music, David Harnish has covered topics from the history of Balinese musical composition as it relates to political changes on the island, and the impact of tourism, to Balinese pedagogy, Michael Bakan has explored the sociological aspects of Balinese musical competitions – notions of cultural identity and ideology, gender issues, and political corruption – as well as touching on ideas of cross-cultural learning, and Edward Herbst has dealt with issues of Balinese identity and ideology in music, as well as ideas of perception and intrinsic aesthetics. Only a handful of scholars, such as Wayne Vitale, with his studies on kotekan figuration and new compositions for seven-tone gamelan, and Michael Tenzer, with his writings on the theory and analysis of gamelan melodies and the publication of his Gamelan Gong Kebyár – a book almost 500 pages in length and largely filled with a thorough musical analysis of the genre – have chosen to focus on the music of Bali.

In the annual list of new dissertations and theses published by Ethnomusicology in the winter of 2001, only six of the over 120 papers written had a distinct analytical bent.\textsuperscript{77} And,

\begin{footnote}
\textsuperscript{76} The Whorfian Hypothesis, was developed in the early part of the last century by Edward Sapir and his student, Benjamin Lee Whorf. Its basic tenet is that the structure of any given language will shape the way in which the speakers of that language view the world. Whorf held that speakers of languages with markedly different grammars would be led by those grammars to different types of observations and evaluations of the same event, and would therefore arrive at an entirely different worldview. Many recent sociolinguists, such as Michael Stubbs, have sought to disprove this theory, stating the opposite – that language will arise out of a people’s need to describe something that they see or feel. It is an ongoing debate in the field of sociolinguistics.
\textsuperscript{77} Post, 2001: 150-6.
\end{footnote}
of the 129 articles published in that journal in the last ten years, only fourteen contained major music-theory analyses. Many articles did not contain a single musical example. In other words, the focus has been not on the music itself, but on the music as a product of its culture, and vice versa. Therefore, while ethnomusicology, like linguistics and literary theory, is a field with many focuses and directions, it appears that "the anthropological view remains a powerful one in the shaping of ethnomusicological discourse,"78 perhaps so much so that it has somewhat overpowered some of the other directions of the field, such as formal musical analysis. Important as these anthropological and sociological studies are – and I do believe that they are essential to an understanding of a musical culture – I would like to suggest that my own music theory-based work, and those of other scholars, may enrich the existing cultural writings on Balinese music in particular, and in the ethnomusicological canon in general, with a fresh perspective, from the less commonly taken approach of formal musical analysis.

5.2 The Historical Place of Music Analysis

Historically speaking, musical analysis did play a central role in ethnomusicological studies. Perhaps we may say that European composers such as Béla Bartók, Zoltán Kodály, and Percy Grainger catalyzed this analytical focus on "ethnic" music with their extensive collections, transcriptions, classifications, and comparisons of European folk musics, carried out in an attempt to preserve traditions that they saw as being endangered. Perhaps Alexander J. Ellis should truly be called the "father" of the field of ethnomusicology, with his "cents" system for determining the tuning of "exotic" instruments, and his 1885 publication "On the Musical Scales of Various Nations." Regardless of who began it, when the field was young, ethnomusicologists – then called comparative musicologists – sought to collect all the world’s music that they could find, and to put it into archives where it could then be analyzed as a "sound object."79 They classified the instruments that they encountered, and analyzed the scales, tonal systems, rhythms, meters, and intervals of the "exotic" musics in these archives, attempting to discover and to outline, with Darwinian

78 Stock, 1993: 225. Italics are mine.
79 One the of the most prominent such organizations was The Berlin Archive.
evolutionary models and biological genetic classification systems, the historical and genetic relationships between the world’s musics.

The evolutionist theories of the comparative musicologists did lead to some flawed analyses. Alice Fletcher and John Comfort Fillmore, in their studies of Omaha Indian music just before the turn of the last century, published their transcriptions with piano accompaniment, "revealing" the "latent sense of harmony" in this "primitive" music, and thus presenting a completely erroneous analysis of the music. Fillmore claimed that the notes that the Indians actually sang were "matter[s] of comparatively little importance. The really important question is what tone they meant to sing." By the early 1900s, these Eurocentric theories were repudiated by such scholars as Benjamin Ives Gilman, who, in an effort to avoid Fillmore’s mistake, created a 45-line quarter-tone ‘staff to notate Pueblo songs. This approach, however, while putatively objective and exact, obfuscated the music by its unnecessary complexity. Hornbostel and Abraham attempted to find a meeting ground between the clear but imprecise transcriptions of Fillmore and those of Gilman, precise but incomprehensible, with the creation of their own transcription system, a veritable musical IPA. Where they failed to be objective as the IPA system was designed to be, was “by stressing the importance of musical intent, and by giving a special value to the musical ‘impressions’ of the transcriber, which in some cases might even override considerations of objective measurement.”

By mid-century, ethnomusicologists were still attempting to find the ideal method for the formal analysis of the musics of the “Other.” New technological forms of exact pitch measurement and autotranscription, such as Charles Seeger’s Melograph, were developed for the perfect representation of objective detail. These, like Gilman’s transcriptions, however, obscured the music in unnecessary acoustic detail. Debates on transcription techniques, such as the Symposium for transcription and analysis published in the journal of Ethnomusicology in 1964, were deemed essential to the development of the field.

Many other analytical techniques developed during this time, such as Mieczyslaw Kolinski’s interval counts, and Alan Lomax’s Cantometrics project have been heavily

80 As quoted in Ellingson, 1992: 122.
81 International Phonetic Alphabet, developed for linguists in the late nineteenth century as a standardized system for speech transcription
82 Ellingson, 1992: 125.
83 Ethnomusicology, 8 (3), 1964: 223-77.
criticized, or deemed of little value by modern ethnomusicologists. It was a new field, however, and these scholars, trapped in the pervading Orientalist\textsuperscript{84} attitudes of the time, were simply trying to navigate through unfamiliar music while at the same time attempting to define their discipline, to create their own roadmap to musical analysis. I have surveyed the work of these early ethnomusicologists in order to put forward the suggestion that, misguided though their studies may have been – inspired, as many of them were, by a naïve ethnocentrism – they still display an overriding desire, an honest attempt, to understand the music – as \textit{music}, as art, as an independent entity – of the world's people. Though the method and the mind-set behind these studies definitely needed to change, I believe that the goal that they represented filled an important role in the field of ethnomusicology.

\textbf{5.3 The Theoretical “Great Divide”}

With the advent of the idea of “music as culture,” an important mid-century turning point in the field, attitudes toward musical analysis in ethnomusicological studies seemed to change. One may say that it was the intersection of the musicological methods of Mantle Hood and the anthropological methods of Alan P. Merriam which exacerbated the theoretical “great divide”[…] Academic music theory and ethnomusicology parted company in the 1960s. Ethnomusicologists turned increasingly to Geertzian hermeneutics and ethnoaesthetics, viewing the application of Western theoretical methodologies to non-Western musics with concern and suspicion.\textsuperscript{85}

While the “split between musicological and sociological analysis is not[… as abrupt as it once was, largely due to the perceived need to deal adequately with both aspects,”\textsuperscript{86} there still does seem to be a bias towards the more culturally-based analyses, as evidenced by my earlier statistics from the Journal for the Society of Ethnomusicology. Indeed, in the 1960s, there were several very important reasons for this change in focus. Until the middle of the twentieth century, the \textit{culture} of the music under study – both the way the people lived and the way they saw their own music – had been virtually ignored. This one-sidedness in the studies of comparative musicologists risked an uninformed analysis of the music, which may have been – and often was – so far removed from what the musicians themselves

\textsuperscript{84} A term coined by Edward Said in the 1970s to describe a representation, or perhaps more precisely, an “interpretation” of some cultural “Other,” which is in some way tainted by a history of Western imperial dominance and an ethnocentric separation of “us” and “them.”

\textsuperscript{85} Pegg et al., 2000: 367 and 394.

\textsuperscript{86} Porter, 1999: paragraph 21.
thought about their music that the study was irrelevant, even dangerously misleading. Considering the technology and analytical models available in the 1950s and 60s, the theoretical aspects of these musics as independent “sound objects” had actually been quite thoroughly studied; there was great need in the field for a broadening of perspective and direction. The fear of misrepresenting the music of another culture – not through the latent Orientalism of the academic, but because of the ethnocentrism potentially inherent in the Western-based systems of musical analysis themselves – was equally real, and an equally valid reason for enhancing the existing analytical study of the world’s musics as “sound objects” with a study of those musics as a product of their cultures.

The reasons for this continued imbalance of focus – still favoring cultural analysis so drastically over musical analysis, like a pendulum that has not yet returned to the center of its swing – are, for me, distinctly less compelling. For instance, “the widespread assumption that only a knowledge of the cultural environment would permit a true understanding of music from an oral tradition,” presuming that “all analytical [music theory-based] activity[…] substitute[s] the tools of the Western researcher for the values and concepts of the native musician”[^87] seems unreasonable on two counts. First of all, it makes the preposterous assumption that a researcher focusing on music-theory-based analysis would not bother to seek out the opinions and values of his/her informants. Secondly, it maintains that formal musical analysis offers no insight whatsoever into a musical culture. Through my own research, I hope to have proven that both of these assumptions are erroneous.

In 1974, Marcia Herndon stated her fear that a detailed analysis, such as the one that I have accomplished, was simply a “passing fad[…] reacting to the supremacy of mathematics and the ‘hard’ sciences in the same manner that earlier scholars tried to apply Darwinian principles to their data whether those principles fit or not.”[^88] This risk, however – that a scholar might create a theory or hypothesis and then distort his/her results to fit that theory – is a possibility in *any* style of research, and not a justification for avoiding certain types of analysis; the researcher must simply be aware of the risk and attempt to avoid it. Another more recent criticism leveled, by Henry Kingsbury, at the use of formal analysis in ethnomusicology, is based on Joseph Kernan’s 1994 article “How We Got into Analysis, and

[^87]: Nattiez, 1993: 242. Italics are mine.
[^88]: Herndon, 1974: 245.
How to Get Out,” which criticizes a Schenkerian analysis of a piece by Schumann as failing to represent the “fragile artistic content” of the song, apparently its most fundamental characteristic. In his own criticism, Kingsbury states that musical analysis “seems to be invalidated by the virtue of disjunction with what one seems to hear.” This may be a risk, but only, again, if one attempts to use a specific theory or hypothesis that does not necessarily fit the data. Examining the music itself, and then formulating a theory relevant to the specific genre in question, as I have attempted to do in my own analysis, seems to invalidate these fears and criticisms.

Lastly, as Peter Manuel has pointed out in his “New Perspectives on American Ethnomusicology,” “to some extent, the greater prominence of anthropological-oriented studies is due to the fact that they are inherently more readable and accessible, and therefore read by more people.” In support of this statement, Manuel compares Steven Feld’s Sound and Sentiment, an anthropologically-based study “considered to be required reading by most ethnomusicologists,” with Nazir Jairazbhoy’s The Rags of North Indian Music. This latter study, he claims “may be a brilliant analysis of the technical aspects of Hindustani music; but its subject matter is so inherently difficult and esoteric that its readership has been largely limited to serious Western students and scholars of Indian classical music. Thus, even among ethnomusicologists, the book is not widely read or influential.” While there is certainly some validity to his point – the likelihood of my own focused analytical study on reyong norot figuration becoming required reading for any first year “world music” class is remote – Manuel is certainly not attempting to discount music analysis in any way. He is simply stating the obvious: that a formal musical analysis of any genre, or element of a genre, will be directed to a different audience – smaller and more specialized – than its anthropological counterpart.

5.4 Musical Analysis – A Growing Place in the Field

Indeed, though “the widely accepted doctrine that music does not exist beyond its context has [often] come to mean that the context is supreme,” or at least that there is “a
general unease, even disdain towards the musical aspect of ethnomusicology," I would like to put forward the suggestion that musical analysis, rather than being continually relegated to second-place status behind anthropologically-based musical ethnography, should perhaps once again be given equal focus in the field of ethnomusicology. In this belief, I may engage with the minds of other more well-established scholars in the field. Several recent studies, including those of Vitale and Tenzer discussed above, while not ignoring the larger cultural context, do focus essentially on the music-theory aspects of their chosen geographical area. These studies range in scope from Jean During’s brief article on the organization of rhythm in Baluchi trance music, a study which attempts to explain the fundamental structures of the music and their aesthetic functions, to Nazir Jairazbhoy’s aforementioned *The Rags of North Indian Music*, an extremely thorough analysis on the technical aspects of North Indian melody, or Marc Perlman’s PhD dissertation on post-colonial music theory in Java, which focuses on the ethnotheory – the music theory of his informants – of the Javanese *karawitan*. Other scholars, such as Johnathan Stock, have attempted to apply distinctly Western analytical models to the exploration of “ethnic” music. Stock suggests that Schenkerian analysis may be appropriate for many ethnomusicological studies, applying it to such diverse musics as the Kalasha praise songs of north-western Pakistan, and Beijing opera.

Probably the music theory-based study most closely resembling my own is Simha Arom’s estimable *African Polyphony and Polyrhythm* (1991). African music, particularly its drum patterns, has a long history of theory-based music analysis in ethnomusicology, from the early, somewhat flawed writings of A.M. Jones, who unnecessarily obscured the structure of the music he studied through complicated polymeters and polyrhythms, to Kofi Agawu’s semiotic analysis of rhythm among the Northern Ewe people of Ghana and Willie Anku’s theory of the structural organization of cyclic African rhythm, recently published in the online journal for the society of music theory.

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95 The three works cited are, respectively, During, 1992; Perlman, 1993, and Jairazbhoy, 1995. A more complete selection of both older and more recent music theory-based studies may be found in the bibliography.
97 Agawu, 1995, and Anku, 2000. Jones wrote several works on African music, many of which are cited in Arom’s bibliography.
Simha Arom’s 650-page study of the music of the Central African Republic is probably the most comprehensive study of its kind. He begins with a broad sketch of the country and its ethnic groups as well as a look at the general features and functions of traditional music, an overview of previous studies, and a classification system for the various types of African polyphony. He also addresses the debate on the need for transcription in ethnomusicological research, as well as touching on methods of data collection and the use of analytical terminology. The main body of his work, however, is an analysis of the structural principles of African polyphony and polyrhythm, and their practical application in various musics. Most applicable to my own work is what Arom terms a detailed ‘X ray’ analysis of Banda-Linda horn music, part of which is an attempt to discover, through an exploration of each musician’s many variations of a single piece, the contents of each instrumental part, and the relationships between the various parts. Arom establishes an underlying model for each instrumental part in the piece, and then, in submitting other pieces to similar analysis, shows that the “structural features and operational rules are identical”98 for each individual horn part, from piece to piece. Just as Arom has taken a “variety of realizations of a single rhythmic cell” and formed “a set of criteria which provide the basis for associating units on a given axis of equivalence,”99 so have I set out to form a set of ‘rules’ – a template, or model for a given two-beat cell of reyong norot, and a set of categories describing ‘allowable’ deviations from that template.

Many other scholars and musicians, both in and out of the field of ethnomusicology, have hailed the importance of these theory-based studies, beyond their use among specialized Western scholars of music. In 1997, J. Lawrence Witzleben wrote that “an emphasis on ‘music sound’[... though] somewhat out of fashion in contemporary Western ethnomusicology[... is] an essential part of our discipline[... and] must not be neglected.”100 He further claims that

The choice between anthropological or musicological orientations is a false one, and represents either a misunderstanding of the bi-disciplinary nature of the field of ethnomusicology or a conscious rejection of this legacy[...]. The ‘hundred flowers’ approach to intellectual development has become an overfamiliar cliché in the West, but as an ideal, I would suggest that it is also quite suitable for the field of ethnomusicology.101

98 Arom, 1991: 324.
99 Ibid., 324.
101 Ibid., 238.
In his foreword to Tenzer’s *Gamelan Gong Kebyar*, composer Steve Reich states:

Knowing how a non-Western music is structured [...] can lead to a completely new and unforeseen use of one’s own Western musical instruments, rhythmic structures, scales, and tunings. This means that books about non-Western music filled with notation and analysis as well as information about cultural context can be enormously useful to Western composers, musicians, and listeners seriously interested in world music.  

And, as György Ligeti says of Simha Arom’s work, “it opens the door leading to a new way of thinking about polyphony.”

With all of these perspectives in mind, I ask again: is formal musical analysis as Marc Perlman defines it – the “technical and analytical concern with the structure of music” developed, according to Nazir Jairazbhoy, “to analyze, predict, or otherwise explain the nature or behavior of a specified set of phenomena” – relevant to the field of ethnomusicology? In looking at the thorough work of Tenzer and Arom, it might be easy to agree that it is, but what about the risks? Is there a greater chance of ethnocentrism or gross misinterpretation in using a Western framework to analyze a non-Western music? Have our music theory analyses been justifiably overshadowed by more anthropologically-based cultural analyses? Or should we simply accept the need to focus equally on both? as Alan Merriam himself stated: “if we do not understand one [element of ethnomusicological study], we cannot properly understand the others; if we fail to take cognizance of the parts, then the whole is irretrievably lost.” I answer these questions with two more of my own. Who is my audience? and, can we ever be free of our own ways of looking at the world – which have been framed by our upbringing in a Western society – whether these cultural biases manifest themselves as a five-line staff system or as a mode of analyzing the cultures that we, always as outsiders in the end, observe? If we question or reject one method of analysis developed in a Western society, we must question or reject our entire field, as it is all largely based on the theories and methods of Western academics. “Research is supposed to uncover facts, but the ‘facts’ can only be somebody’s interpretation.”

Indeed, post-structuralists such as Jacques Derrida might have us believe that

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102 Reich, 2000: xv.
106 Merriam, 1964: 35.
107 Nettl, 1992: 393.
language and discourse in general constitute conceptual, epistemological systems in themselves; that any attempt to represent the values (or even music) of 'the Other' is inherently a subjective distortion, since these values must be translated into the discourse, and thereby, the epistemology of the narrator; and that an element of arrogant, authoritarian condescension is inherent in any attempt at representation, particularly by scholars from the imperialist West.\footnote{Manuel, 1999: paragraph 16.}

While this idea is not necessarily at the center of Derrida's theories, it is certainly an offshoot of post-structuralism, and has caused a veritable "crisis of representation" in anthropology, embodying a common fear among honest scholars that "no matter how intimate' [...] involvement with the people concerned, no matter how deep [our] professed interest in the subject — [we] will represent nothing but the assumptions of our own kind."\footnote{Gidley, 1992: 3.} Yet, I must believe that there is value in what we, as ethnomusicologists do — in all of what we do. We come, as outsiders, to respect and to try to understand, in our own way — there is no other — someone else's music, and to share that limited understanding with other outsiders. If we do not use all of the available methods, imperfect as they may be, we close a door on a potential understanding.

While the anthropologically-based studies that have largely dominated the field of ethnomusicology for the last fifty years are essential, perhaps it is time to bring the field full circle; to rediscover and expand upon its vital, if misguided, analytical beginnings, now free of the Darwinist, naïve ethnocentrism and latent colonialist stereotypes that pervaded most of the early ethnomusicological studies. It seems time, now, to develop Fillmore and Hornbostel's research of tuning systems and organology, and Bartók's collections and transcriptions, with cultural context and ethnotheory now in mind, into a complete exploration of musical structure, from the cellular to the macroscopic levels. While I do recognize that it is potentially dangerous to study any small aspect of a musical tradition in a vacuum — without reference to larger cultural connections — I feel that it is equally limiting to become so enraptured by the \textit{anthropology} of music that the \textit{music} itself is virtually ignored. Perhaps this study will never help a Balinese person to better understand his/her musical tradition, but the same may be said of much ethnomusicology. Did Lisa Gold expound upon the inner musical meanings in \textit{Gender Wayang} music for the benefit of the Balinese people, or for a greater understanding among outsiders? May it then be said that, though coming from a different angle, my own study and other Western-based musical analyses have the
same goal: to expand the minds of those outside the culture into a deeper understanding of all its aspects. And, in a tradition in which there is no written discourse for the discussion of seemingly inherent rules, using analytical methods understood by the audience of the study is the best and most honest way to make that study useful. As Pandora Hopkins stated, back in 1966, “[w]e utilized our familiar staff notation because of a desire to display the notation itself as a phenomenon that already possesses meaning for us, and, as such, we found that it provides valuable material for comparison.”

I have done no more here than to offer the results of my own analytical findings, garnered from the study of one man’s playing over the period of several months. It is, by no means, a complete study. Nor am I claiming that the ‘rules’ I have stated are universal, or even consciously understood among the Balinese. Perhaps these patterns, these categories of constraints on improvisational freedom, are simply accidental; certainly they are unconscious. A Balinese musician is no more likely to say, “I think I’ll play a suspension here in the fourth subdivision of this 1-0 cell,” than a composer of the Classical era was of saying, “I think I’ll compose this piece in sonata form” – both are unconsciously done. Just as the inherent patterns used in Balinese reyong norot figuration were not taught, but created from a Balinese “feeling,” passed, almost by osmosis, from father to son, neither was sonata form invented and forcibly imposed on Classical composers by their teachers; rather, it evolved naturally, and was codified in hindsight by scholars hoping to understand the structure of a musical culture from which they were, temporally, outsiders. And, as that analytical form now exists for our own understanding of Classical music, so, too, have the template and deviational categories shown in this musical analysis been created to engender deeper understanding of the music of the Balinese gamelan gong kebyar.

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Glossary of Frequently Used Terms

**advanced pokok tone unison:** a template “deviation” which involves arriving at the pokok tone one subdivision earlier than is dictated by the template.

**anticipation:** a template “deviation” which involves arriving at a tone in the template one subdivision early and then repeating that tone again where it was “meant” to be played, according to the template.

**banjar:** “ward or hamlet; small to moderate-sized civic community whose members share various obligatory collective tasks.”

**bapang:** A common gong pattern in gamelan music. Realized as \((G)_P_t_P_G\).

**baris:** a group of traditional warrior dances for gong kebyar with a gilak gong pattern. Also the shortened name of Baris Melampahan, which is the most common of these dances, most often performed by one male dancer.

**byar:** an eight-note “chord” played on the reyong in kebyar texture, containing tones 1, 3, 4, 6, 7, 9, 10, and 12. It is often accompanied by a scale-tone unison on the metallophones, the kendang’s dag, and (often) gong stroke, all playing the same rhythms.

**calung:** five-keyed (single octave) metallophone in the middle register of the gamelan, which most often plays the pokok melody. (Also called jublag.)

**cell:** the two-beat unit (comprised of eight sixteenth-notes) beginning one sixteenth-note subdivision after a pokok tone and ending on the subdivision coinciding with the following pokok tone.

**cengceng:** a set of several small cymbals mounted on a wooden base and struck by two handheld cymbals.

**colotomic:** a term coined by Jaap Kunst to mean cyclic music punctuated by a recurring pattern of gong strokes.

**complex deviant cell:** a cell containing a combination of more than one template “deviation.”

**dag (D):** open, pitched stroke of the right hand on the kendang wadon.

**delayed pokok tone unison:** a template “deviation” which involves arriving at the pokok tone one subdivision later than is dictated by the template.

**deviations:** notes in reyong norot figuration that do not adhere to the master template. (Also called nonstandard tones.)

**ding-dong-deng-dung-dang:** Balinese solfège names for the five tones of the pélog scale. Often abbreviated as i-o-e-u-a.

**elaborating parts:** referring, in this context, to any of the instruments that elaborate on the basic pokok melody in any way. This may be simply an idiomatic payasan elaboration from the ugal, but most often refers to the lines played by pemadé, kantilan, and reyong. In the case of the gangs, these elaborating parts may be either non-interlocking (with the sangsith playing at the interval of a kempyung above the polos), or interlocking (see kotekan.)

**end unit:** The four sixteenth-notes making up the second half of a two-beat cell.

**ethnotheory:** the music theory about a given musical tradition that comes from within the culture, not one that is imposed by scholars outside the tradition.

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feeling: a term used by Balinese musicians such as Dewa Ketut Alit to describe the unconscious musical knowledge that they have which dictates the way they play a given elaboration. Also a term used to describe the emotional intent of specific melody or elaboration types.

gamelan: complete and inseparable sets of instruments – largely percussive – played on the Indonesian islands of Bali and Java.

gangsa: any instrument in the group of two-octave range metallophones used in the gamelan gong kebyar. These include one (sometimes two) ugal, four pemade, and four kantilan. The term may also refer to the group of instruments as a whole, or the complete group excluding the ugal, which serves a different function in the gamelan from the other gangsa.

gilak: A common gong pattern in gamelan music with an 8- or 16-beat cycle. Realized as (G) __ G P __ P G.

gong (G): largest hanging gong in a gamelan ensemble, marks the end of a cyclic melody. (Also called gong ageng.)

gong kebyar: a modern, secular genre of gamelan music featuring bronze metallophones, gongs, hand drums, and bamboo flutes. Characterized by its intricate interlocking (kotekan) sections and flashy, metrically free kebyar textures.

gong tone: final scale-tone of a cyclic melody, coinciding with a gong stroke.

gongan: period in gamelan music that spans one full statement of a cyclic melody.

heterophony: refers to any style of music in which two or more simultaneous musical lines vary – accidentally or deliberately, slightly or significantly – on what is recognized as the same melody.

i-o-e-u-a: Abbreviations for ding-dong-deng-dung-dang.

jegogan: five-keyed (single octave) metallophone in the lowest register of the gamelan, which generally plays at half the density of the calung.

kantilan: ten-keyed (two octave) metallophone of the gangsa section, playing in the highest register of the gamelan. There are four kantilan in a gong kebyar ensemble.

kebyar: 1 – to burst open. 2 – shortened term for gamelan gong kebyar. 3 – section in gong kebyar music characterized by fiery syncopated passages of additive rhythms and free or changing meter, in which there is very little rhythmic independence between the strata.

kempli (k): small mounted gong used for marking the beat in the gong kebyar repertoire.

kempur (P): Medium-sized free-hanging gong used to punctuate important structural moments in the gong kebyar cycle.

kempyung: 1 – an interval of four scale tones, including the sounding tones. 2 – a note that is three scale tones above the note in question. (Also called ngempat.)

kendang: Balinese drum. See also lanang and wadon.

kendang pattern substitution: a template “deviation” (part of the second-half flexibility category) which involves replacing the end unit of a reyong norot cell with the melodic realization of the interlocking kendang pattern [DTTD].

kinetic quality: Degree of movement (stasis or motion) of a layer of music, be it the pokok melody or an elaborating strata.

klentong (t): small free-hanging gong used to punctuate important structural moments in the gong kebyar cycle. (Also called kemong.)
**kotekan:** Melodic interlocking parts. Played by the *pemade, kantilan, and reyong,* and creating a composite melody which generally moves at a rate of four notes per *kempli* beat. (see also *norot, nyog cag,* and *ubit-ubitan,* as well as *polos* and *sangsih.*)

**lanang:** The higher of the two drums in the *kendang* pair. Also considered to be the male drum. (see also *wadon.*)

**lelambatan:** a word which literally means “slow music,” it refers to one of the older and slower classical styles of *gamelan,* or to a newer composition based on the older styles (also called *kreasi lelambatan.*)

**majalan:** Kinetic or moving. Used in reference to the kinetic quality of a *pokok* melody, an elaborating strata, etc. (see also *ngubeng.*)

**manis:** Balinese word meaning “sweet.”

**neliti:** two-octave ranged melodic stratum moving at a rate of one note per *kempli* beat (twice the density of the *pokok.*) May be played by the *ugal* or, compressed into one octave, by the *penyacah.*

**ngempat:** see *kempyung.*

**ngubeng:** static or unchanging. Used in reference to the kinetic quality of a *pokok* melody, an elaborating strata, etc. (see also *majalan.*)

**ngubeng-majalan switch:** a template “deviation” (part of the second-half flexibility category) which involves replacing the end unit of a *majalan* cell with the corresponding end unit of a *ngubeng* cell, or vice versa.

**norot:** *kotekan* style featuring one-to-one note alternation between the current *pokok* tone and its scalar upper neighbor, and characterized by a three-note anticipation of each new *pokok* tone. (Also called *nyok cok* or *njok tjok.*)

**nyog cag:** *kotekan* style featuring regular rhythmic alternation between the *polos* and *sangsih* components, with the *polos* playing duple subdivisions coinciding with the beat and the *sangsih* filling in the notes in between.

**ocak-ocakan:** a fiery, syncopated texture characteristic of the *gong kebyar* style featuring the *reyong’s byar,* which, along with the *kendang* and the *cengceng,* forms “an agogic layer of changing syncopations.”

**Orientalism:** a term coined by Edward Said in the 1970s to describe a representation, or perhaps more precisely, an “interpretation” of some cultural “Other,” which is in some way tainted by a history of Western imperial dominance and an ethnocentric separation of “us” and “them.”

**paired tuning:** a system of tuning the metallophones in a *gamelan* so that each one is tuned to be slightly higher or lower than the virtually identical instrument next to it; the carefully measured difference tone created in the frequencies between each of the keys in an instrument pair produces a shimmering quality to the music.

**panggul:** mallet.

**payasan:** melodic elaboration of the *neliti* or *pokok* line with some limited “improvisational” freedom. Realized idiomatically on such solo instruments as the *ugal, suling, trompong,* and *rebab.*

**pélog:** term used for the five-tone scale of the *gamelan gong kebyar,* though originally it was a Javanese term referring to a seven-tone scale of unequal intervals, of which the Balinese five-tone scale is a mode.

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112 Ibid., 66.
**pemadé:** ten-keyed (two octave) metallophone of the *gangsa* section, playing in the middle register of the *gamelan*. There are four *pemadé* in a *gong kebyar* ensemble.

**pemetit:** the highest (fourth) of four playing positions on the *reyong*, using the instrument’s high *ding*, *dong*, *deng*, and *dung*.

**pengenter:** the second of four playing positions on the *reyong*, using the instrument’s low *ding* and *dong* and its mid-range *deng*.

**Pengosekan:** village, near Ubud, Bali, where Dewa Ketut Alit grew up.

**penyacah:** five-keyed (single octave) metallophone in pitched one octave above the *calung* and typically playing at the rate of one note per beat (one note per *neliti* tone.) The *penyacah* is an optional instrument in the *gamelan gong kebyar*.

**penyorog:** the lowest (first) of four playing positions on the *reyong*, using the instrument’s low *deng*, *dung*, *dang*, and *ding*.

**perceived pokok line:** in the deviational categories discussing the decrease or intensification of the underlying *pokok* motion, this is the altered *pokok* line that the *reyong* musician is temporarily elaborating upon inside his/her head, regardless of the actual *pokok* line being played.

**pokok:** literally translated as base or trunk, this is the center of the Balinese melodic hierarchy – a melodic stratum moving at a rate of one tone for every two *kempli* strokes. Generally played by the *calung*.

**polos:** literally translated as simple or basic, it is one of the two complementary melodic elaboration parts played by the *pemadé* and *kantilan* and (sometimes) the *reyong*. Of the two complementary components, the *polos* is the line that most faithfully tracks the contour of the underlying *pokok* melody. (see also *sangsih*, *kotekan*, and elaborating parts.)

**polos norot template:** *reyong norot* model that is an exact imitation of what a *gangsa polos* musician would play in non-interlocking *norot* figuration.

**ponggang:** the third of four playing positions on the *reyong*, using the instrument’s mid-range *dung*, and its high *dang* and *ding*.

**rebab:** two-stringed bowed spike lute, used in the music of Bali and Java.

**reverse norot:** a template “deviation” through which the usual *norot* shape, instead of alternating between the prevailing *pokok* tone and its scalar upper neighbor, alternates instead between the *pokok* tone and its lower neighbor.

**reyong:** set of twelve small pitched gongs, tuned to the same pitch classes as the metallophones in a *gamelan*, and mounted in ascending scale order in a long wooden case. Played by four musicians each controlling two *panggul*.

**sangsih:** literally translated as different or complementary, it is one of the two paired melodic elaboration parts played by the *pemadé* and *kantilan* and (sometimes) the *reyong*. The *sangsih* component complements the *polos* through the use of *kempyung* and through various different *kotekan* (interlocking) techniques. (see also *polos*, *kotekan*, and elaborating parts.)

**suling:** end-blown bamboo flute; a solo instrument in the *gong kebyar* style.

**suspension:** a template “deviation” which involves repeating a tone in the template for one more subdivision in which that tone is not a template note.

**template:** model for *reyong norot* elaborations created by the author, against which all other *norot* realizations are measured and compared. May also be referred to as the “base.”
template-abiding cell: a reyong norot figuration that does not play any notes outside of the master template. May contain polos norot template notes, kempyung, or rests.

trompong: Set of ten small mounted gongs, tuned to the same pitch classes as the metallophones in a gamelan, and mounted in ascending scale order in a long wooden case. Played by one solo musicians controlling two panggul, and often realizing a payasan.

tut (T): open, pitched stroke of the right hand on the kendang lanang.

ubit empat: a form of ubit-ubitan kotekan in which the composite melody spans a range of four consecutive tones per pattern unit, with the polos and sangsih components each controlling two, and coinciding in kempyung on their outer tones.

ubit empat substitution: a template “deviation” involving a single-cell substitution of an ubit empat figuration in a reyong norot realization.

ubit telu: a form of ubit-ubitan kotekan in which the composite melody spans a range of three consecutive tones per pattern unit, with the polos and sangsih components sharing the middle tone and each controlling one of the outer tones alone.

ubit-ubitan: kotekan type in which the polos and sangsih are both syncopated, and coincide with each other at irregular intervals. (see also ubit empat and ubit telu.)

ugal: Ten-key (two-octave) range metallophone, playing in the low register of the gamelan; leader of the gangsa section, and, in combination with the kempli and the kendang, of the gamelan ensemble as a whole. here are sometimes two but most often one ugal in a gamelan gong kebyar. Often plays a payasan on the neliti or pokok melody.

wadon: The lower of the two drums in the kendang pair. Also considered to be the female drum. (see also lanang.)

wayah: Balinese word meaning “great,” in the sense of mature, complex, or difficult to accomplish. Generally used in describing an elaboration line.
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Oleg Tunmilhingen
penyorog variation #34 -- played 2x

penyorog variation #33

penyorog variation #32

penyorog variation #31

penyorog variation #30

penyorog variation #29

penyorog variation #28
pengenter variation #14

pengenter variation #13 -- played 7x

pengenter variation #12

pengenter variation #11 -- played 2x

pengenter variation #10

pengenter variation #9 -- played 5x

pengenter variation #8
Attention that I have made for analytical case does not affect the analysis which is, in any case, at the cellular level in any way.

Note: Because this sixteen-beat melody is actually an eight-beat melody repeated twice, I have shown each group of eight beats in All's

Kebur Ja'va Semara
Ongkek-Ongkek Ongkir

- jegogan
- calung (pokok)
- 2 octave peliti
- ugal payasan
New Composition (Lelambatan style)

Dewa Ketut Ali
penyvog variation #1 - played 7x (how Alfi would teach)
New Melody

Dewa Ketut Ali