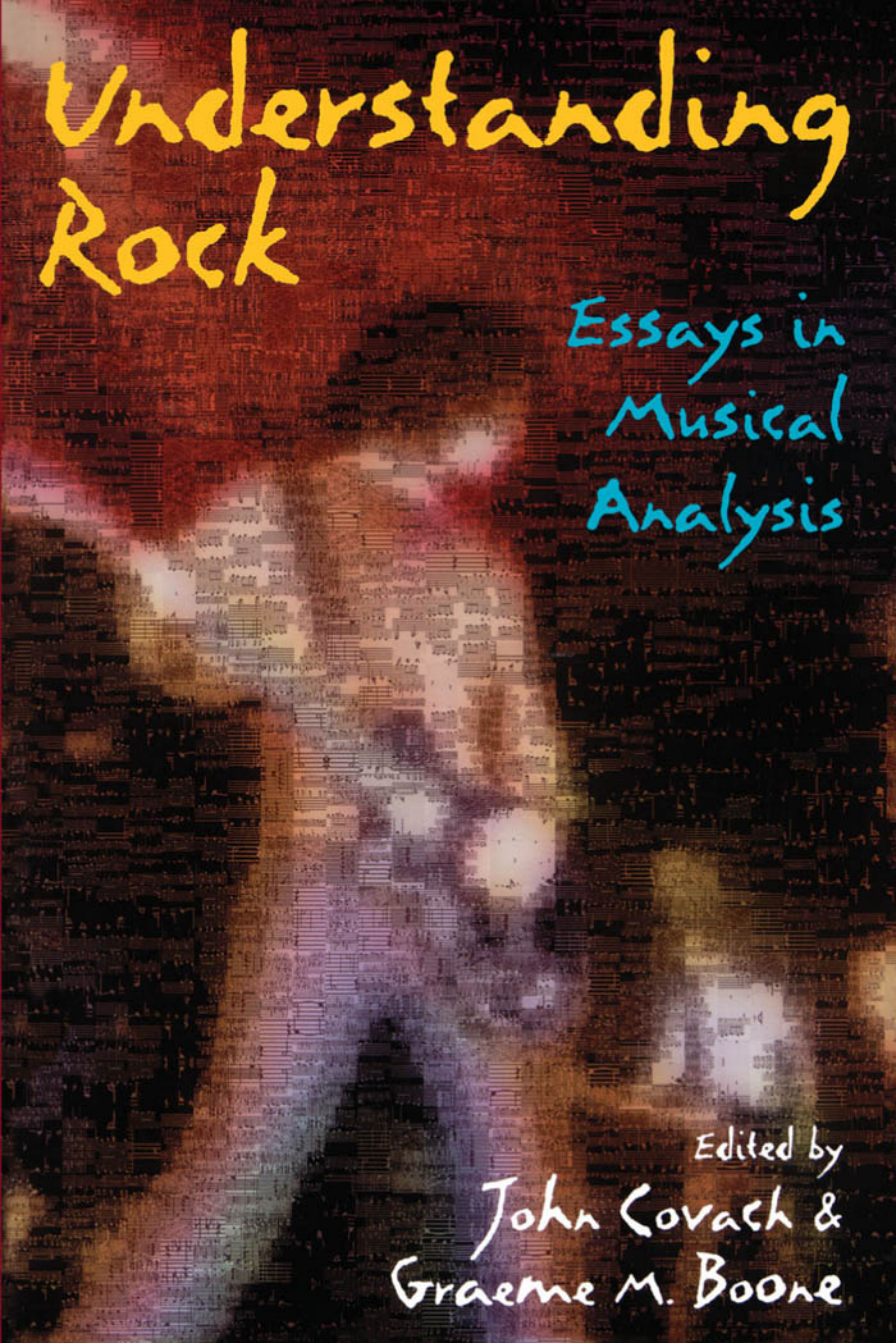
Understanding Rock
Essays in Musical Analysis
Edited by
John Covach &
Graeme M. Boone

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## ESSAYS IN MUSICAL ANALYSIS

Edited by
JOHN COVACH & GRAEME M. BOONE

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# Preface

In the summer of 1974, the rock critic Lester Bangs was invited to type a review of a J. Geils Band concert onstage as part of the band's show. Jumping at the chance to jam with a favorite band and, at the same time, to storm the ultimate barrier between music and meaning, Bangs set up his typewriter next to the musicians as if it were another instrument. As he typed away in rhythmic and mental counterpoint to the music, he became more excited and frustrated until, at the song's climax, he smashed the table and finally stomped the typewriter itself in a fit of ecstatic rage.[1]

Is this the way it is, or should be, between rock music and the critical mind? Since the beginning of rock 'n' roll, opponents of the music, and some fans too, would have us think so. The plaint of rock's enemies is familiar: loud, raucous, drug ridden, and narcissistic, if not nihilistic, rock music causes degeneration in youth, transmitting social evils and subverting rational thought and responsibility; even worse, it is boring, annoying, bad music. The same, of course, was thought about earlier musical crazes that now seem tame and stodgy by comparison: swing, ragtime, the waltz, the minuet, the sarabande. Each of these did in fact threaten some perceived element of social order, and rock has posed its own distinct threats: arising in a time of social upheaval, it has reflected, accompanied, enabled, and at times even constituted the rumblings of that upheaval.

Partly for that very reason, however, a generation has grown up for whom this music is fundamental and necessary; partly also because it has simply been there, a

central part of American life. It hardly seems coincidental that the election of 1992 should have climaxed with a sax-toting president and a rock anthem. In this and innumerable other ways, rock music has come of age: not in itself, for it sprang fully fledged from the bosom of postwar America, but rather as a cultural force internalized by the broadest spectrum of American society. In 1968, a *Star Trek* episode could shock us with a scene from after the year 2000, showing a rock band composed of elderly hippies (yipes!) whose wrinkles and gray hair clashed disturbingly with their peace symbols and bellbottoms. In 1997 such an image is no longer shocking at all: we see it on record covers all the time, a natural (no matter how ironic) course of events. In precise contrast to the *Star Trek* hippies, today's old rockers look happy, well adjusted, successful, rich. The counterculture is the culture.

Rock's social stigmata remain, of course, but they are integrated into an increasingly complicated status quo. In a time of unprecedented social and cultural eclecticism, the enduring American preoccupation with distinctions of highbrow versus lowbrow is greeted with ambivalence by a society for which it has lost its clarity and, for many, its relevance. In that respect, the doomsayers are right. Allan Bloom's call to America, to "grow up" beyond childish, blaring popular music, falls on the deaf ears of a public crowned with Walkmen.[2] In other respects, however, the doomsayers are wrong, as they always have been. Each younger generation grows up into, and through, its popular music, in pursuit of its own maturity. That music is a part of the American environment, and the music's changes will continue to reflect broader social changes, as they always have in the past. As American culture drifts inevitably further from its traditional Western European slant, it cannot but redefine and reinvent itself; but this does not mean that its diverse roots will be lost. Instead, they take on a new, and newly specific, relevance. Rock, country, jazz, hip-hop, classical, and other musics continue to influence each other and intertwine in smooth or rough combinations, just as their audiences do; and writers about music continue to absorb and reflect upon these developments.

Lester Bangs's essay offers a classic example of such reflection. Is it a violation of his experience that, following his J. Geils bacchanal, he should have sat himself down again, presumably at another typewriter, to write a story, and a parable, of it? It is that second act of writing, not the first, that brought his story into existence for us, the public who knows him only through reading him. His personal rock apocalypse was, after all, only a passing delirium whose darknesses proved compatible with, even essential to, his goals and responsibilities as a critic and a person. The same is true of the vast majority of rock experience. Writings about rock music profit from the opportunity to relate, and reflect on, remarkably broad and fresh varieties of musical and social activities, ranging from the most Dionysian and in-the-moment to the most Apollonian and coolheaded; to make sense of them through language; and to bring them into relationship with other aspects of personal and social life. To the extent that there remains a challenging, or even conflictual, relationship between rock music and traditional social values, the paradox of creation and destruction that Bangs sets down is likely to form an essential part of the best rock writing. As those values change, so will the music change, and so will the writing.

Seven years ago, at the time when this book was first conceived, academic attention to rock music was in a period of tremendous growth, the results of which now

surround us clamorously. In bookshops throughout the country, the proportion of popular in relation to classical titles is expanding, and now includes academic studies as well as detailed transcriptions, histories, and biographies.[3] Meanwhile, academic job listings around the country show an unprecedented demand for popular specializations. These developments result in a new kind of irony, for there is, as yet, no clear "discipline" of rock studies, no consensus on what might constitute its focus or its limits, as a field of study or set of approaches; and it is not clear that there ever will or should be.[4] It is not that scholars have failed to attempt to address such questions. On the contrary, the interested reader is no longer lacking in stylistic overviews, encyclopedic histories, theoretical treatises, and college textbooks. But these manifold projects are beset from the outset by ideological and methodological controversies, while still lacking the solid underpinning of serious, close musical analysis that is needed if clear musicological understanding is to be obtained.

Conservatives doubt that rock music should be taught in universities at all, since the traditional focus of the humanities has been on canonical works in the European art tradition. Radicals doubt that analytical methods developed to describe such art music can appropriately be employed to address what is most meaningful in rock, since such analyses reinforce the musical work as an autonomous aesthetic object and produce interpretations foreign to the proper nature of the music. Such debates have their value and are, in any event, inevitable. But while some will see fit to pursue them to logical or extreme conclusions, others will continue, more quietly, to lay the groundwork that the field of rock musicology needs, if it is to find compatibility with the goals and assumptions of existing pedagogy. For it is the firm conviction of the writers in this book that that pedagogy, while in need of further reflection and modification (as it always is), provides strong and useful tools for analysis of rock music as it does for other music, and that, through such analysis, a better understanding of the music—not just the conditions surrounding it, but the music itself—can be gained. Like Lester Bangs, we have been through the music and have faith in its integrability, just as we have no doubt about the positive impact rock analysis can and will have on other musical analysis.[5]

Work on *Understanding Rock Music* began in 1990, after five of its contributors (Boone, Brown, Covach, Everett, and Headlam), all active in musicological and theoretical circles of academia, gave papers at a special session devoted to the analysis of rock music at the joint national meeting of the Society for Music Theory and the American Musicological Society in Oakland, California. The session was scheduled at 8:00 P.M. on Friday night, a time that seemed ironically appropriate: close to the heart of any rocker's schedule while, in academic conference terms, as dead as possible. To our knowledge, it was the first session ever devoted to rock music in either society; still today, sessions on the subject remain rare at the mainstream meetings.

The essays in the finished book are linked, and also opposed, by a number of themes. Beyond the avoidance of replication in subject matter and methodology, the editors have not found it necessary to ensure the presence of specific styles or approaches, nor of any particularly broad or "representative" variety. Instead, we have encouraged the authors to concentrate on music about which they feel strongly and to use whatever analytical materials seem most appropriate to their ideas about that music. As it happens, in the subject matter there is a focus on the era of the

1960s and '70s, a time when many of us were young and impressionable; every essay gives prominent attention to recordings made in that period. But the actual discussion ranges from early acoustic blues recordings to the '90s country rock of k. d. lang, and from the Beach Boys' a cappella doo-wop spinoffs to the psychedelic instrumental jamming of the Grateful Dead. In the process, a number of analytical issues germane to the study of rock are raised, and a breadth of analytical approaches comes into play.

In "Progressive Rock, 'Close to the Edge,' and the Boundaries of Style," John Covach explores the ways in which this Yes song, a landmark in the progressive-rock movement, fuses aspects of Western art music and early '70s rock. Heard by contemporaries as evoking an "alternative classical music," it is revealed through analysis as mixing features of both traditions, not only on a surface level but, more unexpectedly, on deeper structural levels as well.

Daniel Harrison, in "After Sundown: The Beach Boys' Experimental Music," is also concerned with the "art" boundaries of pop, which he explores through analysis of the tonal language of the Beach Boys. Discussing recordings from the period of "Good Vibrations," Harrison compares alternate versions and outtakes of songs in order to explain how the Beach Boys' music developed up through the unfinished landmark *Smile* LP and speculates on why that legendary album was never completed in the way group leader and composer Brian Wilson intended.

Both Walter Everett and Lori Burns employ Schenkerian techniques in their analyses, demonstrating in the process how features of musical structure can be seen to reflect issues addressed in the lyrics. At the same time, their approaches are directly opposed, since Everett's essay takes on a broad survey of music in order to make points about one songwriter's stylistic evolution, while Burns's focuses more closely on two songs in order to make connections between musical and social commentary. Everett's "Swallowed by a Song: Paul Simon's Crisis of Chromaticism" investigates the 1970s period in Paul Simon's songwriting, a time when Simon concentrated on chromatic techniques. Everett approaches Simon's music with particular attention to the composer's own commentary on it and frames his analysis of the 1970s songs by a telling consideration of Simon's preceding and following styles, both of which are marked by a predominant diatonicism. In Burns's essay, "'Joanie' Get Angry: k.d. lang's Feminist Revision," she presents an analysis of lang's 1991 cover version of Joanie Sommers's 1962 "Johnny Get Angry." The changes that lang makes in covering the tune provide a pointed commentary on the social assumptions contained in the original, a commentary made explicit in the video for lang's song. Burns's study reveals how transformations of the musical structure contribute to the song's effect, constituting a level of purely musical critique as well as a foil to its lyrics.

Matthew Brown also relies on Schenkerian theory to account for musical structure in his essay, "'Little Wing': A Study in Music Cognition." But he does so in a distinct way and to a different end. Brown's topic is the role that hierarchical tonal structures can play in a musical composition by Jimi Hendrix, as well as in its improvisations. But his point of departure is recent work in cognition, including the information-processing model and the idea of problem solving. By these means, Brown offers a new model for explaining how Hendrix approached tonal and motivic organization.

One of Brown's analytical concerns is the question of blues adaptation in rock style; in Dave Headlam's essay, "Blues Transformations in the Music of Cream," this becomes the central issue. Headlam approaches the blues-rock interface through one of its most important manifestations, the late-1960s British power trio Cream. Tracing its versions of such blues classics as "Cross Road Blues" and "Rollin' and Tumblin'" back to the original sources in Delta and Chicago blues, he illuminates the stylistic transformations in analytical terms and assesses their significance. With these analyses in mind, he then turns to consider the style of Cream's own blues compositions.

Graeme Boone, finally, takes a song by the Grateful Dead as the focus of his essay, "Tonal and Expressive Ambiguity in 'Dark Star.'" Countering a common perception of the Dead's music as aimless or disorganized, he uses harmonic, contrapuntal, and melodic analysis to reveal the means by which the Dead achieve musical and expressive cohesion, even as they incorporate extended and, to some extent, unpredictable improvisations into their music. The Dead's approach is, in conclusion, measured against the broader context and significance of the Deadhead movement.

Ultimately, the justification for any analytical program stems from one's own experiences. Like many now in the fields of musicology and music theory, the authors in this book were born in the decade of the birth of rock 'n' roll and grew up with it. Introduced to the serious study of organizing structures in art music, we naturally asked similar questions of popular music. Of what materials is it made? What makes it the way it is? Today's climate of heightened self-consciousness discourages scholars from taking their likes and dislikes for granted; but these are also times when people are making new and important discoveries simply by turning things around inside their own minds and connecting different parts of their own fragmented experience. This book is precisely the result of such a personal, interior movement, and for each author, it has yielded a different discovery. Ultimately, we find no better justification for analyzing rock music than this: it is part of us, and we like it.

Cambridge, Mass. G. M. B.
Chapel Hill, N.C. J. C.
January 1997

**Notes**

1. Lester Bangs, "My Night of Ecstasy with the J. Geils Band," in his *Psychotic Reactions and Carburetor Dung*, ed. Greil Marcus (New York: Vintage, 1988), 142–45. This review originally appeared in *Creem* (Aug. 1974).

2. Allan Bloom, *The Closing of the American Mind* (New York: Simon and Schuster, 1987), 68–81.

3. According to a subject search in *Books in Print*, the percentage of books devoted to popular music in the years 1980–89 represented 4% of the total of books on music. In the years 1990–96, this figure has risen to 7%.

4. Among recent arguments for the importance of the study of popular music, see Susan McClary and Robert Walser, "Start Making Sense! Musicology Wrestles with Rock," in *On Record: Pop, Rock, and the Written Word*, ed. Simon Frith and Andrew Goodwin (New York: Pantheon, 1990), 277–92; Susan McClary, "Terminal Prestige: The Case of the Avant-Garde

in Music Composition," *Cultural Critique* 12 (Spring 1989): 57–81; Richard Middleton, "'Change Gonna Come'? Popular Music and Musicology," in his *Studying Popular Music* (Milton Keynes: Open University Press, 1990), 102–26; and John Shepherd, "Musicology and Popular Music Studies," in his *Music as Social Text* (Cambridge: Polity Press, 1991), 189–223.

5. For a more detailed discussion of issues that arise in the analysis and music-historical assessment of popular music, see John Covach, "We Won't Get Fooled Again: Rock Music and Musical Analysis," *In Theory Only* 13, nos. 1–4 (1997): 119–36, reprinted in *Keeping Score: Music, Interdisciplinarity, Culture*, ed. Anahid Kassabian, David Schwarz, and Lawrence Siegel (Charlottesville: University Press of Virginia, 1997), 75–89; "Popular Music, Unpopular Musicology," in *Redefining Music*, ed. Nicholas Cook and Mark Everist (Oxford: Oxford University Press, 1997).

# 6

# "Little Wing"

## A Study in Musical Cognition

MATTHEW BROWN

1

After considerable resistance from the scholarly community, rock music has recently emerged as a legitimate subject for academic discourse. This newfound prestige has stemmed partly from a wave of pluralism and interdisciplinary research that has swept across campus, and partly from the sheer importance of the music. Given its popular origins and broad appeal, discussions of rock music have tended to avoid detailed musical analyses and have focused their attention, instead, on issues of social function and meaning. To quote Simon Frith: "For the last fifty years, pop music has been an important way in which we have learned to understand ourselves as historical, ethnic, classbound, gendered subjects."[1]

One area, however, in which rock music remains largely ignored is music cognition. As David Hargreaves observes: "Psychologists have woefully neglected the 'mundane,' or 'lay' aspects of musical experience. They have dealt largely with serious 'art' music, which is a minority interest relative to the many different forms of 'folk,' or popular music."[2] This state of affairs is regrettable because rock music is an important resource for evaluating and perhaps even refining current theories of musical behavior, both for listeners and composers. Among other things, it can help us test our explanations of how listeners acquire and use musical skills, how they perceive and remember music, how they discriminate between musical styles, and

how they shape their responses according to various environmental constraints. As this essay will make clear, rock music may also shed light on the nature of musical composition.

Many of us, it seems, are fascinated by musical composition and the possibility of explaining some of its mysteries. Musicologists are interested because composition lies at the heart of the musical experience; they care both about the ways in which individual pieces are put together and about the people who created them. Psychologists are intrigued because composition is one of the most remarkable expressions of human thought; through studying it, they hope to gain new insights about cognitive processes in general.

Yet, for all its allure, composition remains "the least studied and least well understood of all musical processes."[3] Musicians have tried to remedy this situation in two main ways. Music theorists have focused their attention on the finished piece; by demonstrating how the final score hangs together, they have shown what decisions the composer actually made. Meanwhile, many music historians have turned toward the composers' sketches and drafts; by examining these documents in detail, they have shown why individual composers made some choices and not others.

While these approaches certainly tell us much about the composition of individual pieces, they shed little light on what goes on inside the composer's head.[4] On the contrary, many musicians are quick to claim that such processes are so complex as to be beyond our control. Some believe that, since great pieces are unique entities, the manner in which they are created must be unique as well.[5] Others insist that composition is just too complicated for rationalization.[6] Psychologists have not fared much better. Although there is growing interest in music cognition, little progress has been made toward understanding composition per se. Certainly researchers face innumerable problems. Musical composition is an extremely sophisticated form of behavior and is hard to study in the laboratory; it is not clear how to isolate one variable from another experimentally. Furthermore, explaining composition requires us to understand something about the general ways in which people perceive, encode, store, and recall music; unfortunately, we still have little idea about how these processes work. As Marvin Minsky pessimistically notes, "Surely it is premature to ask how great composers write great symphonies before we know how ordinary people think of ordinary tunes."[7]

Minsky is certainly correct to be skeptical about the prospects of explaining musical composition, but his remarks should not prompt us to give up hope altogether. Indeed, this essay will try to take a few steps in the right direction by showing how composition might be understood as a form of knowledge-based problem solving. The discussion has two main parts. The first considers problem solving in detail and focuses on the so-called information processing model. In particular, it shows how a tonal piece of music might be regarded as a successful solution to a musical problem. Having described some the difficulties that arise when applying the model, it examines how Schenkerian theory offers us one way of representing the model analytically. The second part uses the information processing model in conjunction with Schenkerian theory to explain Jimi Hendrix's celebrated tune "Little Wing," demonstrating how Hendrix solved various problems of tonal and motivic organization in this remarkable ballad.

## 2

Although there are many forms of human behavior, Karl Popper was surely right to point out that people are "constantly engaged, night and day, in solving problems."[8] For Popper, these problems have a definite purpose: they allow the person to anticipate future needs or impending events.[9] He is hardly alone in his appraisal; cognitive scientists have already shown how problem solving guides general mental processes, such as learning, not to mention specific tasks, such as painting a picture.[10] Since musical composition has many connections with these activities, we have every reason to suppose that it might be explained along similar lines.

But how exactly do people solve problems? Of the many ways to answer this question, cognitive scientists often draw on the information processing model.[11] According to this model, problem solvers begin with some basic material, the starting state, and some desired solution, the goal state. They then make a series of choices that transforms the starting state into the goal state. Each transformation creates an intermediate state that conforms to various external constraints. Taken together, the total number of valid transformations constitutes the problem space. The precise subset of transformations needed to change the starting state into the goal state is known as the search strategy.

Even this brief sketch makes clear that the information processing model treats problem solving as some sort of search. Allan Lesgold explains this point rather nicely: "if we think of the problem space as a sort of maze of mental activity through which we must wander, searching for a solution, we have a powerful metaphor for reflecting the nature of problem solving."[12] It is important, however, to realize that the search strategy only explains what transformations are needed to solve a problem in a particular way by showing how a successful solution fits within the problem space. The search strategy does not attempt to re-create the actual steps, successful and unsuccessful, that the problem solver took to find this answer. This process is known as the discovery procedure.

To explain tonal composition as a type of problem solving, consider the following scenario. One of the main problems facing a tonal composer is that of taking some kernel of musical material and extending it to create a coherent tonal work. In this context, the starting state is usually a motive, rhythmic pattern, or harmonic progression, and the goal state is the finished score.[13] Composers transform the starting state into the goal state in a variety of ways; since every extension must create a coherent tonal unit, the most important transformations are those defined by the tonal system itself. The problem space is the complete list of well-formed tonal pieces that could conceivably be written from a given kernel of musical material using the principles of tonal harmony and voice leading. The search strategy can be thought of as the precise string of transformations that generate the piece in question, and identifying these transformations in turn amounts to showing how the finished work is a well-formed tonal composition. The discovery procedure is the actual manner by which the composer moved from the starting state to the goal state, as for example might be recorded in his or her sketches or drafts.

As it stands, the information processing model provides a powerful way of explaining problem solving. Difficulties arise, however, in trying to use it to explain

specific tasks, especially those of great complexity. It is unclear, for example, what knowledge is needed for a given task and how it should be represented mentally. For one thing, problem spaces must be general enough to contain all knowledge that might conceivably be relevant to a task, yet flexible enough to allow for inferences and analogies.[14] Unfortunately, there is no way of predicting what knowledge will be relevant or irrelevant in any given case. These matters are especially acute in real-world situations where the knowledge base is very large and constantly revised. For another thing, there are many types of knowledge; some are easier to represent as states and transformations than others. Psychologists usually differentiate between three main types of knowledge: fact-based or declarative knowledge; skill-based or procedural knowledge; and rule-based or production knowledge. Of these, production knowledge is the simplest to represent in terms of states and transformations.[15] The situation is further complicated by the fact that people do not usually treat each piece of knowledge in isolation; they usually absorb, process, and recall it in hierarchically organized packages. These packages are often referred to as frames or schemas.

These difficulties become evident if the information processing model is applied to tonal composition. It is hard to decide what knowledge a composer needs to compose a particular piece and to determine how it should be represented. Since tonal pieces are shaped by many rhythmic, thematic, formal, harmonic, contrapuntal, and textural factors, composers must surely draw on many different types of knowledge when they write. The precise nature of this knowledge depends on their individual intentions as well as on the cultural context within which they work. The snag is that it is not obvious how a particular piece of knowledge influences a specific decision. Even confined to matters of harmony and voice leading, how the composer's knowledge should be represented in an analytical form is not obvious. Over the past few centuries, music theorists have devised many different ways of explaining the harmonic and voice-leading properties of common-practice music. Most make a few basic assumptions about tonal relationships. For example, they assume (1) that tonal harmonies are fundamentally triadic; (2) that they are hierarchic; (3) that they are essentially diatonic; (4) that tonal melodies tend to fall and reach maximum closure when they descend by step to $\hat{1}$; (5) that tonal dissonances arise from motion between consonances; and (6) that parallel octaves and fifths are banned.[16] However, although we know that tonal composers undoubtedly process their knowledge hierarchically, we are not sure how to represent it as such analytically.[17]

Other difficulties arise in trying to explain search strategies. One hitch is that problem states are not always well defined; it may not be possible to fix the starting and goal states with certainty.[18] Some activities are so complicated that the main issue is to decide which problems are really capable of solution. As Robert Nozick explains, "people do not simply *face* given problems; their task is to *make* a problem, to *find* one in the inchoate situations they find themselves in."[19] To make matters worse, problems may change shape as they are being solved; all too often, their precise nature becomes apparent only after considerable effort has been expended. There may even be situations in which a goal can be satisfied in more than one way.[20] Similarly, although problem solvers sometimes work by brute force, most rely on heuristics or learned search strategies. When solving a new problem, experts see

how it resembles problems they have already solved and whose search strategies are stored schematically in their long-term memories.[21]

These particular issues loom large for anyone trying to understand the nature of composition. As John Sloboda has stressed, the problems facing them are usually ill defined.[22] Given the complexity of most musical compositions, the composer often faces a network of problems, some more difficult to solve than others. Even limited to the main themes, the precise nature of this material may be hard to interpret. It may also be tricky to specify exactly when the goal state has been reached: sometimes, the same piece may exist in different versions (such as those found in autographs, first editions, revised editions, and so forth) and in various settings (such as transcriptions, arrangements, orchestrations, and so forth). In some cases, we may be unable to say which one of these is definitive.[23] It is also clear that composers rely heavily on heuristic searches.[24] Skilled composers do not consider every possible continuation of their starting material; on the contrary, they normally pick from a small number of choices. Since composers often come up with similar decisions in different pieces—they might, for example, use characteristic modulation schemes—it seems likely that they have learned search strategies. There is also good reason to suppose that these strategies are stored hierarchically as abstract frames and schemas.

Although there are many ways to represent problem spaces, search strategies, and so forth for musical composition, one that seems particularly promising is Schenkerian theory. For example, Heinrich Schenker showed how the six rules of tonal harmony and voice leading might be represented as background states (*Ursätze*), transformations (*Verwandlungen*), and levels (*Schichten*).[25] In this representation, the tonal problem space can be seen as the set of all possible well-formed pieces that can be derived from a background by Schenkerian transformations, with the sequence of levels corresponding to the string of intermediate states. The search strategy is the precise sequence of transformations found at each level, the heuristics the distinctive ways in which composers group transformations at particular levels. Of course, by showing tonal relationships at different levels, Schenkerian theory provides a way of showing how composers solve problems hierarchically, thereby balancing local and global concerns. In other words, Schenkerian graphs offer a way of representing how tonal composers store and manipulate their material in terms of frames or schemas.

## 3

Having identified some of the pros and cons with the information processing model and having seen how to use Schenkerian theory to represent this model for tonal composition, I will use them to shed light on a single composition, Jimi Hendrix's exquisite ballad "Little Wing." An examination of the compositional problem Hendrix faced in writing this song encounters some of the difficulties outlined above.

Although the precise composition history of "Little Wing" will probably never be reconstructed, we do know a few facts about its genesis.[26] Documentary evidence suggests that the song took several years to finish. Hendrix mentioned to interviewer Jules Freedmond that the tune grew out of a rhythm-guitar figure he came

up with while playing in a club in Greenwich Village in 1965-66.[27] After further experimentation, the song took its final form when Hendrix was in Monterey in June 1967. In his words: "It's based on a very, very simple Indian style . . . I got the idea like when we were in Monterey and I was just lookin' at everything around. So I figured that I take everything I see around and put it maybe in the form of a girl, or somethin' like that, you know, and call it 'Little Wing,' and then it would just fly away."[28] He added, "It's very simple, but I like it."

Once Hendrix had figured out "Little Wing," he recorded it with the Experience in October 1967 at Olympic Studio B in Barnes, with Chas Chandler producing, Eddie Kramer engineering, and George Chkiantz assisting.[29] This version consists of four complete verses. The first is scored for rhythm guitar and has a glockenspiel doubling some of the bass notes; the second and third are vocal; and the fourth is a guitar solo. The track ends with a fadeout through a fifth verse of guitar solo. The band did not rehearse the tune before the recording session; according to the drummer, Mitch Mitchell, and the bassist, Noel Redding, Hendrix simply showed them the finished material at Regent Sound, and after a couple of run-throughs, they immediately laid down each track at Olympic Studios on 25 October.[30] Three days later, Hendrix added new vocals and overdubbed a glockenspiel part, and the next day, Kramer modified the vocals by half-phasing them and passing them through a revolving Leslie speaker.[31]

With each track on tape, Hendrix, Chandler, and Kramer picked "Little Wing" and twelve other cuts for a new album dealing with universal and human love. This album was to be called *Axis: Bold as Love.* According to Hendrix, the Axis is an all-knowing mystic who provides a bridge between the real and the spiritual worlds and through whom we can find true love.[32] Hendrix and the others then spent four days mixing each song. Unfortunately, the mixes for side one were lost, and another eleven hours were spent remixing each song from the original tracks.[33] The completed album was released in England on 1 December 1967 and in America in January 1968. Three songs were later issued as singles.[34]

It should be clear that "Little Wing" evolved over several years. The lack of rehearsals suggests that bass and drum parts were not very complicated and that Hendrix may have had a very good idea about what he wanted before the musicians arrived at the studio. This is certainly in keeping with eyewitness accounts of his working methods. It is also clear that Hendrix worked hard on processing and mixing the final cut. The fact that he took so much care and attention suggests that numerous technical issues needed to be resolved. But what precisely might these issues have been?

Obviously, Hendrix faced a large number of different problems in composing "Little Wing," many of which were clearly ill defined. Some of the most immediate were those of thematic and tonal organization: at some level Hendrix had to find a way of extending some kernel of thematic material so as to create a larger tonally satisfying whole. In terms of the information processing model, the task is to determine the nature of Hendrix's starting state and problem space, and doing this requires understanding the basic characteristics of Hendrix's music.

It is important to remember that Hendrix's musical roots were firmly planted in the blues. Born on 22 November 1942, Hendrix spent his formative years in Seattle


Figure 6.1. Jimi Hendrix, "Little Wing"

absorbing the classics of Robert Johnson, Muddy Waters, Howlin' Wolf, John Lee Hooker, Albert King, and other great bluesmen. After a stint in the army, he started his career on the Chitlin' circuit backing such well-known rhythym and blues performers as Little Richard, Wilson Pickett, the Isley Brothers, Curtis Knight, and B. B. King. These early experiences left an indelible mark on Hendrix. According to Billy Cox, who played bass with him in the army and later in the Band of Gypsies, "His style . . . reflected his youth and social awareness, but just about everything Jimi and I recorded was blues. Everything was right from the soil, right from the depth of mankind. Even the current stuff Jimi played was just amplified blues."[35] Many other experts agree, though Tony Glover perhaps said it best: "Hendrix plays Delta Blues for sure—only the Delta may have been on Mars."[36] I will return to this "interplanetary" aspect of Hendrix's style later.

Given that Hendrix worked within blues traditions, the starting state and problem space for "Little Wing" can be imagined in blues terms. The starting state for "Little Wing," as in so many blues-based compositions, is a core of predominantly pentatonic figures that we hear at the beginning of the song. In fact, Hendrix presents several distinct pentatonic formulae in measures 1–4, as shown in figure 6.1. The first (ex. 6.1a) is introduced in measure 1 and consists of four ascending notes A–B–D–E; it recurs transposed up a fourth in measure 3. The second and third figures appear in measure 2: the former consists of a simple turn figure, G–A–G (ex. 6.1b), while the latter consists of the pattern C–B–C–B–G (see ex. 6.1c). Hendrix presents a fourth formula, the undulating gesture in measure 4 (ex. 6.1d). Significantly, these four gestures do not feature prominently in measures 5–10, though we do hear a variant of the second gesture in measure 6.

Since blues pieces essentially conform to the principles of common-practice tonality, Hendrix's problem space can be defined by the rules of tonal harmony and counterpoint. As mentioned earlier, these can be represented in the form of Schenkerian backgrounds, transformations, and levels. Since "Little Wing" centers on the tonic E, the problem space will be determined by a background state in E minor. In fact, "Little Wing" also follows the basic formal constraints of many blues compositions; instead of alternating between verses and choruses, it is built from repetitions of a single harmonic pattern (ex. 6.2). The harmonic motion of the first four bars (I–III–IV–I) is, in fact, more typical of eight-bar than of twelve-bar blues: as Dave Rubin notes, the former not only have faster changes than the latter, but they often shift from I to III in minor keys.[37] Hendrix presumably learned this pattern during his years playing rhythym and blues.

But although "Little Wing" definitely has its roots in rhythm and blues, it is no ordinary blues; on the contrary, the piece has many features we associate with late-

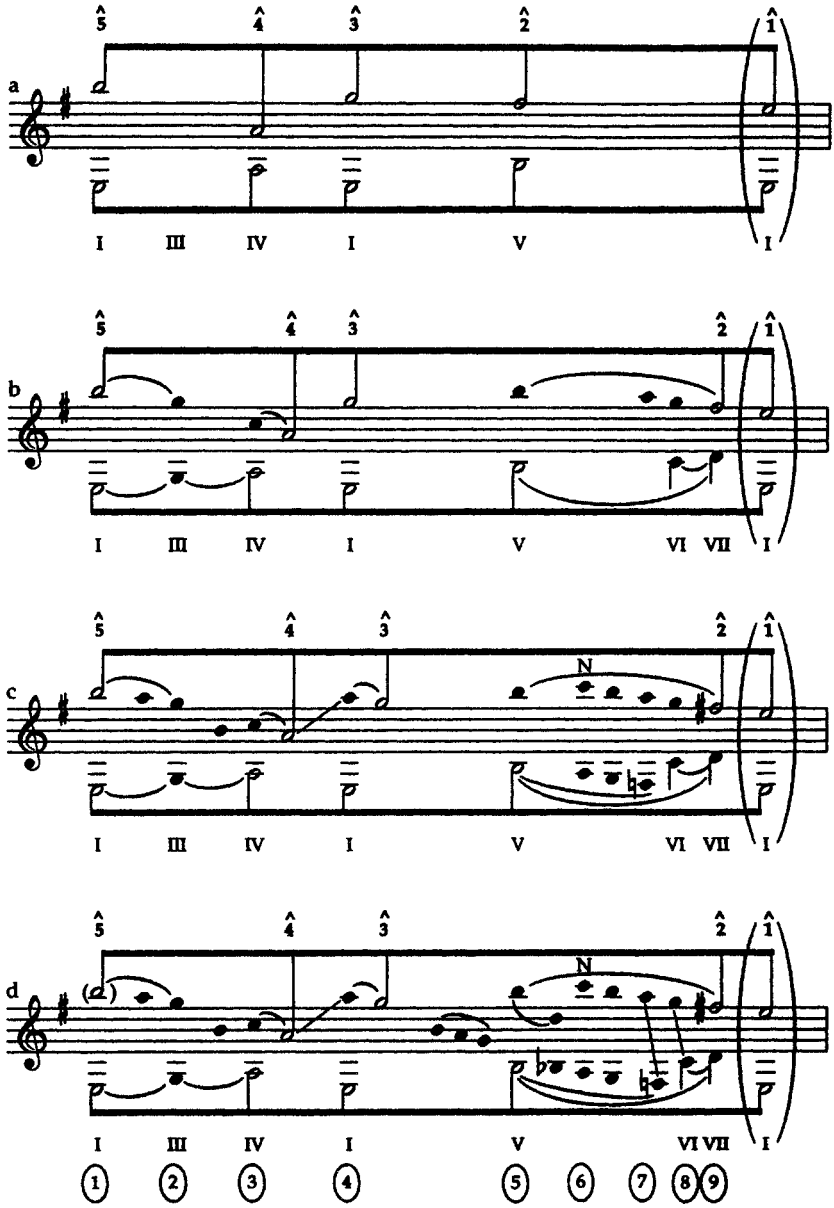
a
b
c
d
N
I III IV I V I
I III IV I V VI VII I
I III IV I V VI VII I
I III IV I V VI VII I
1 2 3 4 5 6 7 8 9

Figure 6.2.

1960s rock. These features played a decisive role in determining Hendrix's search strategy. To begin with, the imagery and style of the lyrics are clearly psychedelic. The ballad is a love song, but, as with so many of Hendrix's texts, it has an almost phantasmagorical quality. Hendrix describes how his imaginary lover walks "through the clouds" with "a circus mind that's running wild." When he is sad she comforts him and then flies away. Overall, the mood of "Little Wing" is tender and playful; it does not treat love with the passion and anguish of a slow blues, or with the superficiality and chauvinism of so-called cock rock.

Hendrix's fascination with instrumental and studio effects likewise smacks more of psychedelia than of the blues. Although "Little Wing" is considerably more restrained than the other tracks on *Axis*, the song demonstrates the composer's remarkable sensitivity to sound per se. For example, Hendrix's guitar part contains striking shifts in texture and timbre. The introductory verse is built from a subtle blend of partial chords, inversions, and hammered and pulled double stops.[38] Hendrix's sound is warm and clean; he uses out-of phase pickups on his Stratocaster and touches of univibe and octavia.[39] The solo, meanwhile, has a quite different quality. Not only does it start with a dive-bomb on the whammy bar, but the guitar tone is overdriven, phased, and passed through a rotating Leslie speaker. According to Hendrix, the results sound "like jelly bread."[40] The vocals are likewise filtered, phased, and run through a rotating Leslie speaker. The complex mélange of timbres is further highlighted by the glockenspiel. In emphasizing Hendrix's love of effects, it is important to stress that these are not simply gimmicks added to spice up an otherwise impoverished piece; on the contrary, it is clear from interviews and eyewitness accounts that electronic effects were basic elements of the composition.

Most significantly, Hendrix's melodic and harmonic idiom also shows strong psychedelic influences. Whereas bars 1-4 are built from the familiar blues progression I–III–IV–I, bars 5–10 have quite different origins. For one thing, the overall motion from a B-minor chord (m. 5) through a C-major sonority (m. 8) to a D-major chord (mm. 9–10) is not typical of a blues in E; progressions of this type, with their weak tonal functions, are far more common in rock.[41] For another, the chromatic chords on B♭ and F in measures 5 and 7 are idiomatic of psychedelic music; both chords lie outside the prevailing pentatonic collection. Lastly, many of Hendrix's voicings are decidedly unbluesy. Most striking in this regard are the ubiquitous 4–3 and 9–8 suspensions and stacked fifths. For example, the second motive (ex. 6.1b) is clearly built from a 4–3 suspension, whereas the B and C sonorities in measures 5 and 8 are both elaborated by 9–8 suspensions (C♯–B and D–C, respectively). Later, in measures 7–8, we hear a string of parallel stacked fifths: B–E–A, A–D–G, G–C–F. These sonorities have an exotic feel that may reflect the "Indian" influences Hendrix mentioned in the reminiscence cited earlier.[42]

If the motivic and harmonic characteristics of measures 5–10 are so different from those of measures 1–4, how did Hendrix manage to bind them together? In what way does the finished piece represent a discrete search through the tonal problem space? To see how the recording of "Little Wing" answers these questions, I will look more closely at the song's tonal structure. Two things become apparent. On the one hand, although measures 5–10 are usual, the progression from B minor to D major can actually be regarded as a large expansion of a dominant harmony. The

intermediary chords arise from contrapuntal motion between the V chord in measure 5 and the VII chord in measures 9–10. It then becomes clear that the entire song moves from the tonic (mm. 1–4) to the dominant (mm. 5–10).

On the other hand, an examination of the layout of the opening verse makes clear not only that the guitar part encompasses a striking shift of register but also that it does so by means of a stepwise descent. From a single listening, one hears that the opening bars establish a broad pitch spectrum that extends from the E below middle C to the E three octaves higher. By the end of the verse, however, the bass part has ascended to the D above middle C, and the upper parts have descended over an octave. One of the most important strands in the contrapuntal structure descends by step from B ($\hat{5}$) through A ($\hat{4}$) and G ($\hat{3}$) to F♯ ($\hat{2}$). The pitch B appears in the opening guitar slide and on beat two. Hendrix shifts to A in measure 3 for the subdominant harmony and G in measure 4 with the return to the tonic. The pitch F♯ first appears as part of the dominant harmony in measure 5 (beat three) but is eventually confirmed with the arrival of VII in measure 9.

Based on this information, I offer a Schenkerian account of Hendrix's search strategy. To extend the core of pentatonic gestures given in example 6.1, Hendrix not only followed the rules of tonal harmony and voice leading, but he also conceived of the large-scale harmonic and melodic motion mentioned above. The graphs given in example 6.2 show how the surface structure of the song actually satisfies these requirements and constitutes a successful search through the problem space. The large-scale motion from I to V is shown in the background (ex. 6.2a), and the surface chord progression—I–III–V–I–V–VI–VII—is shown in the foreground (ex. 6.2d). The intermediate levels (exx. 6.2b and 6.2c) demonstrate how the foreground is a transformation of the background. Among other things, the stepwise descent to G is anticipated locally in measures 1–2, 4, and 7–8. In addition, the unusual parallel ninths in measure 7 actually arise from complex displacements between the outer parts (these are indicated by the diagonal lines).

In the later verses, there are significant differences between Hendrix's vocal line and his guitar solo. The voice part does not articulate the stepwise descent from B to F♯; instead, it seems to focus on members of the pentatonic scale (E–G–A–B–D–E). For example, in measures 1–2, the line outlines a retrograde of example 6.1a (E–D–A–G) and in measures 3–4 it completes the scale B–A–G–D–E. The guitar solo, meanwhile, brings out the descent from B to F♯ even more clearly than the rhythm guitar part. The solo arrives on B in measure 2 thanks to an expansion of example 6.1c (E–D–B). Hendrix emphasizes the pitch A in measure 4 with the pattern A–B–C–A–G. In measure 6 the solo begins with a complete version of example 6.1c an octave higher. Hendrix actually goes to great lengths to highlight the descent from $\hat{5}$ to $\hat{4}$ in measure 7 by a pair of wonderful parallel sixths, B–G and A–F. The descent from G to F♯ in measures 8–9 is emphasized by several versions of example 6.1b.

It would seem that Hendrix tended to repeat these processes in his live solos for "Little Wing."[43] In the three most widely available live recordings, he takes the basic outline of the studio solo and elaborates it by various pentatonic fills and extra flourishes. Significantly, they all contain the parallel sixths in measure 7, and all recycle the four pentatonic gestures, though in slightly different arrangements. The

consistency between the studio and live solos suggests the extent to which the underlying counterpoint was inscribed in Hendrix's head. Besides having an extra verse of solo, the only other important divergence from this standpoint between the studio and the live solos is that the latter end with a coda. Typically, this coda does not end on E; instead, it shifts to E♭ before closing on G7. Once again, the fact that Hendrix was consistent in his solution to the problem of closure indicates that he relied on a specific search strategy and on a well-defined goal state.

## 4

This chapter has shown that "Little Wing" can be regarded as a successful search through a tonal problem space. The starting state is a core of pentatonic themes, the goal state is the finished piece, and the problem space is the set of all well-formed pieces that can be composed from these themes according to the principles of tonality. The search strategy itself not only balanced blues practice with psychedelic procedures, but it also traded off local and global concerns. Although we cannot reconstruct the precise way in which Hendrix discovered this search strategy, there is circumstantial evidence that it involved a long process of experimenting on the guitar as well as a period of abstract manipulation away from the fret board. Indeed, eyewitnesses have stressed the extent to which Hendrix produced overall mental images of his music. For example, according to Eddie Kramer, "There were no meetings in advance and Jimi created things in a very loose sort of fashion. *He* knew in his own head what he wanted to do and how he wanted to create—he had pages and pages of lyrics to choose from—but he knew *exactly* what he was doing. Every overdub, every backward guitar solo, every double-tracked thing was carefully worked out . . . in his own head . . . in a very private sense."[44] These remarks certainly conform with the general picture of knowledge-based problem solving outlined earlier, and they suggest how rock music can provide an important medium for understanding the process of composition.

This essay started by noting that current research in rock music reflects a trend toward pluralism and interdisciplinary study. In this regard, Frith is right to claim that rock and other popular music helps us "understand ourselves as historical, ethnic, classbound, gendered subjects." But besides being social animals, human beings are also complex bundles of neurons capable of the most elaborate thoughts. The ways we think are determined as much by hardwired cognitive processes as by any external social forces. As the psychologist Roy D'Andrade explains, "Cultural models are actually little *machines*. They are software *programs*, not just *data*. Of course, the brain contains a more general mental machine that runs these little cultural machines, just as there is a more general program that runs a specific Fortran program. But the little programs are important, because without them the general program, which does various universal procedures such as *search*, *chunk*, *store*, and *recall*, would have to work very hard to do very little."[45] Rock music promises to help us explain both the cultural machines and the general mental programs. As such, it can play a vital role in the most important interdisciplinary issue of all: that of understanding human behavior and the inner workings of the mind.

Notes

1. Simon Frith, "Towards an Aesthetic of Popular Music," in *Music and Society*, ed. Richard Leppert and Susan McClary (Cambridge: Cambridge University Press, 1987), 149.

2. David J. Hargreaves, *The Developmental Psychology of Music* (Cambridge: Cambridge University Press, 1986), 7–8.

3. John Sloboda, *The Musical Mind* (Oxford: Oxford University Press, 1985), 103.

4. According to Joseph Kerman, "Much ingenuity has been expended in discovering how individual works have passed through various stages to their final state, and explaining why; and by extension, to analyzing how their composers have worked as a matter of routine. By a further extension, one could go on to study musical creativity in general, at least in theory." He adds that the latter project "has not been seriously attempted since the days of Max Graf and Frederick Dorian in the 1940s." Joseph Kerman, "Sketch Studies," in *Musicology in the 1980s*, ed. D. Kern Holoman and Claude V. Palisca (New York: Da Capo Press, 1982), 58.

5. According to Felix Salzer: "There is, in a sense, no creative process as such, for the minds of different composers must have worked differently. Every composer probably had his own way of mentally 'thinking it out'; that process surely worked in different ways even within the output of a single composer." Felix Salzer, "Review: Robert Marshall, *The Compositional Process of J. S. Bach*," *Journal of Music Theory* 16 (1972): 232. This notion is common in aesthetics, see Suresh Raval, *Metacriticism* (Athens: University of Georgia Press, 1981), 39.

6. To quote Richard Kramer: "The creative act (the point needs restressing) is mysterious. If that puts it too romantically, it is an act that is so complex, motivated by so many impulses—as remote and impersonal as the entire web of knowable history, and as remote and intensely personal as the sum of one man's experience—that the material evidence (records of the act) are little more than occasional memos of a deeper, continual process." Richard Kramer, "The Sketches for Beethoven's Violin Sonatas, Opus 30: History, Transcription, Analysis" (Ph.D. diss., Princeton University, 1973), 516–17; cited in Douglas Johnson, "Beethoven Scholars and Beethoven Sketches," *Nineteenth-Century Music* 2 (1978): 15.

7. Marvin Minsky, *The Society of Mind* (New York: Simon and Schuster, 1986), 80.

8. Karl Popper, "The Place of Mind in Nature," in *Mind in Nature*, ed. Richard Q. Elvee (San Francisco: Harper and Row, 1982), 45.

9. Popper, "The Place of Mind in Nature," 45.

10. James Voss, "Problem Solving and the Educational Process," in *Foundations for a Psychology of Education*, ed. Alan Lesgold and Robert Glaser (Hillsdale, N.J.: Erlbaum, 1989), 255. For discussions of problem solving in painting, see Michael Baxandall, *Patterns of Intention: On the Historical Explanation of Pictures* (New Haven: Yale University Press, 1985), and E. H. Gombrich, *Art and Illusion: A Study in the Psychology of Pictorial Representation* (Princeton: Princeton University Press, 1960). More generally, Karl Popper has described the general role of problem solving in the acquisition of knowledge; see his *Objective Knowledge: An Evolutionary Approach* (Oxford: Oxford University Press, 1972).

11. For helpful surveys of problem solving, see Voss, "Problem Solving and the Educational Process," 251–55 and 286–94; and Richard E. Meyer, "Problem Solving," in *The Blackwell Dictionary of Cognitive Psychology*, ed. Michael W. Eysenck (Oxford: Blackwell, 1990), 284–88. More extensive accounts can be found in Allen Newell and Herbert Simon, *Human Problem Solving* (Englewood Cliffs, N.J.: Prentice-Hall Inc., 1972); Igor Aleksander and Piers Burnett, *Thinking Machines* (Oxford: Oxford Unversity Press, 1987); Avron Barr, Paul R. Cohen, Edward A. Feigenbaum, eds., *The Artificial Intelligence Handbook*, 4 vols. (Reading, Mass: Addison-Wesley Publishing Co., 1981–1989); Allan Newell, *Unified Theories of Cognition* (Cambridge: Harvard University Press, 1990); Kurt VanLehn, "Problem Solving and Cognitive Skill Acquisition," in *Foundations of Cognitive Science*, ed. Michael I. Posner (Cambridge: MIT Press, 1989), 527–79; Alan Garnham, *Artificial Intelligence: An Introduction*

(London: Routledge and Kegan Paul, 1987); Alvin I. Goldman, *Epistemology and Cognition* (Cambridge: Harvard University Press, 1986); Neil A. Stillings et al., *Cognitive Science: An Introduction* (Cambridge: MIT Press, 1987); Zenon W. Pylyshyn, *Computation and Cognition* (Cambridge: MIT Press, 1984); Zenon W. Pylyshyn, ed., *The Robot's Dilemma: The Frame Problem in Artificial Intelligence* (Norwood, N. J.: Ablex Publishing Corporation, 1987); John H. Holland et al., *Induction: Processes of Inference, Learning, and Discovery* (Cambridge: MIT Press, 1986); and Allan Lesgold, "Problem Solving," in *The Psychology of Human Thought,* ed. Robert J. Sternberg and Edward E. Smith (Cambridge: Cambridge University Press, 1988), 188–213.

12. Lesgold, "Problem Solving," 190.

13. For a discussion of problem solving in composition, see Sloboda, *The Musical Mind,* and many of the essays in *Understanding Music with AI: Perspectives on Music Cognition,* ed. Mira Balaban, Kemal Ebcioglu, and Otto Laske (Cambridge: AAAI Press/MIT Press, 1992).

14. For a general account of the Frame Problem, see Pylyshyn, *The Robot's Dilemma.* Clark Glymour describes how the frame problem articulates familiar philosophical issues in his essay entitled "Android Epistemology: Comments on Dennett's 'Cognitive Wheels,'" in *The Robot's Dilemma,* 65–75.

15. See Garnham, *Artificial Intelligence,* 48–51.

16. See Matthew Brown, "A Rational Reconstruction of Schenkerian Theory" (Ph.D. diss., Cornell University, 1989). Carl Schachter produces a similar list in his essay, "A Commentary on *Free Composition,*" *Journal of Music Theory 25* (1981): 124–25.

17. Performing and listening also involve top-down processing. For example, Deutsch and Feroe have shown that when skilled performers play a learned composition, they do so by accessing it in a top-down fashion. Similarly, Sloboda and Parker have shown that when listeners memorize a simple tonal melody, "they build a mental model of the underlying structure in which not all of its surface detail is necessarily retained." See Diana Deutsch and John Feroe, "The Internal Representation of Pitch Sequences in Tonal Music," *Psychological Review* 88 (1981): 503–22; and John A. Sloboda and David H. H. Parker, "Immediate Recall of Melodies," in *Musical Structure and Cognition* (London: Academic Press, 1985): 143–67. For further accounts of the role of top-down processing in music, see Mary Louise Serafine, *Music as Cognition: The Development of Thought in Sound* (New York: Columbia University Press, 1988), 213–22; Robert West, Peter Howell, and Ian Cross, "Modelling Perceived Musical Structure," in *Musical Structure and Cognition,* ed. Peter Howell, Ian Cross, and Robert West (London: Academic Press, 1985), 1–52; John Sloboda, "Musical Expertise," in *Toward a General Theory of Expertise,* ed. Ander Ericsson and Smith, 153–71; Carol Krumhansl, "Tonal Hierarchies and Rare Intervals in Music Cognition," *Music Perception* 7/3 (1990): 309–24; and David Butler and Helen Brown, "Describing the Mental Representation of Tonality in Music," in *Musical Perceptions,* ed. Rita Aiello with John A. Sloboda (New York and Oxford: Oxford Univeristy Press, 1994), 191–212.

18. Robert Nozick. *The Nature of Rationality* (Princeton: Princeton University Press. 1993), 165.

19. Nozick, *The Nature of Rationality,* 165.

20. See Nozick, *The Nature of Rationality,* 163–72.

21. According to Dreyfus and Dreyfus, "The expert has experienced a great number of concrete situations and as a result his brain can discriminate classes of situations. A new situation falls into one such discriminable class and the brain of the expert has learned from experience to associate an action, decisions, or plan as well as various expectations with each class of discriminable situations." Hubert L. Dreyfus and Stuart E. Dreyfus, *Mind over Machine* (New York: Free Press, 1986), 91.

22. Sloboda, *The Musical Mind,* 117.

23. Sloboda, *The Musical Mind,* 149.

24. See Sloboda, *The Musical Mind,* 117.

25. See Heinrich Schenker, *Neue musikalischen Theorien und Phantasien,* vol. 1, *Harmonielehre* (Stuttgart and Berlin: J. G. Cotta, 1906), translated as *Harmony,* ed. Oswald Jonas and trans. Elisabeth Mann Borgese (Chicago: University of Chicago Press, 1954); vol. 2: *Kontrapunkt,* part 1 (Stuttgart and Berlin: J. G. Cotta, 1910) and part 2 (Vienna: Universal, 1922), translated as *Counterpoint,* ed. and trans. John Rothgeb and Jurgen Thym (New York: Schirmer, 1987); and vol. 3, *Der freie Satz* (Vienna: Universal, 1935), translated as *Free Composition,* ed. and trans. Ernst Oster (New York: Longman, 1979).

26. Jimi Hendrix, "Little Wing," on Jimi Hendrix, *Axis: Bold as Love,* Reprise 6281 (1968). For a complete transcription, see Noe "the G" Goldwasser, ed., *Hendrix, Axis: Bold as Love* (Milwaukee: Hal Leonard, 1989), 46–51. An alternative transcription can be found in Steve Tarshis, *Original Hendrix: An Annotated Guide to the Guitar Technique of Jimi Hendrix* (Milwaukee: Hal Leonard, 1982), 55–59.

27. John McDermott and Eddie Kramer, *Hendrix: Setting the Record Straight* (New York: Warner Books, 1992), 92.

28. Harry Shapiro and Caesar Glebbeek, *Jimi Hendrix: Electric Gypsy* (New York: St. Martin's Press, 1990), 225.

29. See Shapiro and Glebbeek, *Electric Gypsy,* 529–30.

30. See Noel Redding and Carol Appleby, *Are You Experienced?* (London: Pan, 1990), 85–86; Mitch Mitchell and John Platt, *Jimi Hendrix: Inside the Experience* (New York: Harmony, 1990), 26; and John McDermott, Buddy Cox, and Eddie Kramer, *Jimi Hendrix Sessions: The Complete Studio Recording Sessions, 1963–1970* (Boston: Little, Brown, 1995), 41.

31. McDermott and Kramer, *Setting the Record Straight,* 92 and 95; and McDermott, Cox, and Kramer, *Jimi Hendrix Sessions,* 42 and 44.

32. This is made apparent in the title track, "Bold as Love." As Hendrix explained: "Well, the axis of the earth, if it changes, well, it changes the whole face of the earth, like every few thousand years. And it's like love, that a human being, if he really falls in love deep enough it will change him. It might change his whole life. So, both of them can really go together, you know." Dave Henderson, *'Scuse Me while I Kiss the Sky* (New York: Bantam, 1978), 174.

33. McDermott and Kramer, *Hendrix: Setting the Record Straight,* 97, and McDermott, Cox, and Kramer, *Jimi Hendrix Sessions,* 45–46. Allan Douglas claims that the original mixes are included in the recent record collection *Live and Unreleased* (Castle Communications, 1989). However, Shapiro and Glebbeeck deny that Douglas's version is the stolen mix, see *Electric Gypsy,* 560.

34. "Up from the Skies," Reprise 0665 (1968), "If 6 Was 9," Reprise 0853 (1968), and "One Rainy Wish," Reprise 0665 (1968).

35. Billy Cox, "Interview," *Guitar Player* 23/5 (May 1989): 47.

36. Charles Shaar Murray, *Crosstown Traffic: Jimi Hendrix and Post-War Pop* (New York: St. Martin's Press, 1990), 138.

37. Dave Rubin, "Blues Power: The Eight Bar Blues," *Guitar School* 1/2 (July 1989): 110–11. Another good case in point is J. J. Cale's tune "After Midnight."

38. According to Dave Rubin and others these techniques are reminiscent of rhythym and blues guitarists such as Floyd Cramer, Bobby Womack, Steve Cropper, Curtis Mayfield, and others. See *Guitar School* 1/3 (Sept. 1989): 118, and 1/ 4 (Nov. 1989): 114.

39. For detailed discussions of Hendrix's use of guitar effects, see Jon Sievert, "The Sounds of Hendrix," *Guitar Player* 23/6 (June 1989): 64–72. Many details can be found in Alan Douglas et al., *Jimi Hendrix Reference Library* (Milwaukee: Hal Leonard, 1989).

40. Michael Fairchild, Liner notes, remastered version of *Axis: Bold as Love* (MCAD-10894, 1993), 14.

41. Richard Bobbitt, *Harmonic Technique in the Rock Idiom* (Belmont, Calif.: Wadsworth, 1976), 92–110.

42. Similar examples occur in "Third Stone from the Sun" (*Are You Experienced?)* and "Castles Made of Sand" (*Axis: Bold as Love*). See Tarshis, *Original Hendrix,* 18–20. Some of Hendrix's solos seem to have exotic inflections, for example, in "If 6 Was 9," "You Got Me Floatin'," and "Castles Made of Sand." Of course, it should be remembered that Ravi Shankar performed at the Monterey Festival before Hendrix.

43. Hendrix apparently performed "Little Wing" live at least nine times. His performance at Winterland (11 Oct. 1968) is preserved on *The Hendrix Concerts* (Reprise 2306–1, 1982) and is transcribed in Noe Goldwasser, ed., *The Jimi Hendrix Concerts* (Milwaukee: Hal Leonard, 1991), 102–3. His performance at the Royal Albert Hall (24 Feb. 1969) appears (misidentified) on *Hendrix in the West* (Polydor 2303, 1972) and *Musique originale du film: Jimi Plays Berkeley* (Barclay 80.555, late 1970s), and his version in Paris (29 Jan. 1968) on *Jimi Hendrix: Stages* (Reprise 9 26732–2). For details of these various recordings, see Shapiro and Glebbeek, *Electric Gypsy,* 493, 530, 544, 544, and 553. *Axis* made its live debut in Stockholm (8? Jan. 1968) with a rare outing of "Up from the Skies"; see Shapiro and Glebbeek, *Electric Gypsy,* 240.

44. Shapiro and Glebbeek, *Electric Gypsy,* 217. Guitarist Mike Bloomfield echoes this view: "Jimi's musical approach, as he explained it to me, was to lay out the entire song and decide how it should be . . . the way it would wind up. He would play the drum beat on a damped wah-wah pedal, and the bass part on the bass strings of his guitar, and the pattern of the song with just wah-wah pedal. Then he would flesh the pattern out by playing it with chords and syncopation. He was extremely interested in form—in a few seconds of playing, he'd let you know about the entire structure. That's why he liked rhythm guitar playing so much—the rhythm guitar could lay out the structure for the whole song." Mike Bloomfield, "Jimi Hendrix Remembered," in *Guitar Heros,* vol. 1 (1989), 71–72.

45. Roy D'Andrade, "Cultural Cognition," in Posner, *Foundations of Cognitive Science,* 824.