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On Meter and the Social Dynamics of Cueing in Bill Monroe's "Muleskinner Blues"*

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ABSTRACT: "Muleskinner Blues," the signature song of bluegrass patriarch Bill Monroe, is at once central to the bluegrass canon and yet metrically enigmatic, featuring a flexible timing structure that fluctuated wildly between performances. This article engages in a longitudinal study of 165 performances of "Muleskinner Blues" across Bill Monroe's career to explore how the musicians that rotated through his band, the Blue Grass Boys, cognitively grappled with the song's flexible structure. Through a series of analytical vignettes, I will detail the distributed cognitive system that drives performances of "Muleskinner Blues," giving special attention to musical cues as tools for calling collective attention to structurally important moments of action. Additionally, I show how the song's flexible meter was weaponized by Monroe in acts of musical hazing, antagonizing his musicians in the high-stakes environment of a live performance. Through these analyses, I show how the song's peculiar meter centered Monroe musically, structurally, and socially, transforming "Muleskinner Blues" into a potent vehicle for the masculine ideology of the father of bluegrass music.

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Introduction

[0.1] On September 10th, 1967, Bill Monroe headlined the first annual Chautauqua Park Bluegrass Festival near Franklin, Ohio. He played to a vibrant crowd in which homegrown country music fans mingled with college-educated "citybillies" and folk revivalists, including the young Frank Godbey, who hooked into the soundboard and recorded Monroe's show.(1) The influx of younger fans into the early bluegrass festival scene did not go unnoticed by Monroe, the self-styled "father of bluegrass music" who, after five songs, stepped up to the microphone to impart a brief history lesson. With his words, captured in **Audio Example 1**, he invited his audience to listen closely to what came next, for they were about to hear the rhythmic essence of bluegrass music flowing from its very source: the old Jimmie Rodgers standard "Muleskinner Blues."

> This is the number that started bluegrass music off, where you would put a little blues in the music. And the timing of this number really done a lot for bluegrass music. And it was the first number we ever used on the Grand Ole Opry. I've sung it so many times, it's really got old for me to sing, but we still get requests for it and we'll do it for you here today like we started on the Grand Ole Opry 27 years ago.

This is the genre's foundational myth: in the beginning, there was country music, then Bill Monroe sang "Muleskinner Blues," and bluegrass music was born.[(2)]

[0.2] It is a myth wrapped in rhythm, in the special "timing" of Monroe's signature song. Indeed, the musical performance that follows Monroe's exhortation weaves its own narrative of rhythmic genesis, tracing in sound a gradual ordering of primal energies. Beginning with a free-time mandolin cadenza that conjures a world of unformed rhythmic potential, the song soon crystalizes with the kick of a guitar into an erratic metrical storm striking out wildly from harmony to harmony. Atop this ever-reshaping tempest, as though commanding it, Monroe's voice wails away unchained to regular beat structures, a stunning display of virtuosity sustained until, at last, he brings the storm to heel with the force of his yodel, summoning rapturous applause from his spellbound audience. Hence, this performance musters story and sound to conjure the idea of a raw, primal sort of bluegrass rhythm, one in which the flow of time itself bends to the paternal voice of Bill Monroe.

[0.3] To be sure, this kind of fluid, flexible meter is not entirely unique to "Muleskinner Blues." The song is an instance of what Joti Rockwell calls a *crooked tune*, a term emic to North American fiddle traditions referring to "tunes having 'extra' or 'missing' beats, that have 'irregular rhythms,' or that 'aren't square'" (Rockwell 2011, 58). But these metrical irregularities pose acute perceptual challenges. The song's driving, pulsating rhythms suggest a duple or quadruple metrical framework, and yet its erratic event timing regularly cuts across that framework. As a preliminary example, if, as shown in **Example 1**, a listener anchored a downbeat to Monroe's accented vocal entrance in the first verse and then heard another on the C-major chord change 23 beats later, then at some point they would need to adjust their two- or four-beat pulse to square it with the music at hand. One solution (of many) to this metrical problem is shown in **Example 2**, where a downbeat is fixed to an agogically and registrally accented G4 sixteen beats into the passage. This hearing places a downbeat one beat earlier than a pure duple or quadruple projection would predict, but locating the realignment here squares nicely with the remainder of the passage, which articulates a pair of four-beat measures leading into the chord change. As locally compelling as this hearing may be, it unfortunately provides a poor set of expectations for parallel passages in later verses. **Examples 3** and **4** show that the eight-beat segment preceding C major in the first verse (labeled X1) compresses to a six-beat segment in the second verse (X2) and expands to a ten-beat segment in the third (X3). Moreover, even if we could sort out stable hearings of all three passages individually, those would fail to generalize across other performances of the same song. As summarized by the box and whisker plots of **Example 5**, throughout Monroe's career, only the verse-2 segment was reasonably fixed at 6 beats in length, while the length of both verse-1 and verse-3 segments varied considerably. Hence, it is nigh impossible to lock down a stable metrical understanding of "Muleskinner Blues" since its beat structure is constantly in flux. Indeed, even the band struggles at times to make sense of the meter. **Example 6** shows a parallel chord change from the opening fiddle solo, in which fiddler Benny Williams leaps onto a C-major chord a full beat ahead of his bandmates, who then scramble to reassemble and re-coordinate. From beginning to end, then, "Muleskinner Blues" expresses a strange, flexible sort of timing where beats coalesce into temporary metrical constellations tied to in-the-moment musical decisions.

[0.4] The fact that "Muleskinner Blues" holds together at all is itself a bit of a miracle, given the conditions under which Monroe's band, the Blue Grass Boys, worked. One of these conditions is the band's infamously high turnover rates: by Tom Ewing's (2018, 365–9) reckoning, at least 149 musicians drifted in and out of Monroe's touring group throughout his 57-year career, amounting to an average turnover of 2.5 musicians per year. A second condition is the equally infamous (and more astonishing) fact that Monroe very rarely rehearsed his musicians. Concerning his first performance with Bill Monroe, Blue Grass Boy Del McCoury recounts, "We got backstage, and all we did was tune up and walk out. Didn't run through nothing!" (McCoury 2010, 52:32), and

similar tales echo across interviews and memoirs.[(3)] Together, these factors provide context for the coordination problems seen in Example 4: this was fiddler Benny Williams's first appearance with the band following a three-year hiatus, and it is therefore quite likely that we are hearing this incarnation of the Blue Grass Boys negotiate the challenges of "Muleskinner Blues" for the first time together in front of a live audience. Their misaligned chord change testifies to the intense musical labor that lies behind every performance of "Muleskinner Blues," a song whose crooked timing demanded lightning-quick responses from an ever-changing assemblage of musicians. How does a musician survive a song like this in circumstances like these?

[0.5] At first glance, the two facets of "Muleskinner Blues" sketched in the preceding analysis—its mythological status as "the number that started bluegrass music off" and its challenging metrical structure—seem almost entirely disconnected. This article argues, however, that the song's metrical flux, like everything else about "Muleskinner Blues," is bound inexorably to Monroe's image as the patriarch of bluegrass music. This is because the answer to the question posed at the end of the preceding paragraph turns out to involve an unspoken educational program in which bluegrass competency develops alongside an initiation into a rigidly defined social hierarchy with Monroe firmly entrenched at the top. In brief, I will argue that Monroe viewed "Muleskinner Blues" as a metrical hazing ritual, wielding its crooked meter to place the Blue Grass Boys in a precarious position fraught with potential failure and humiliation. In this context, a hunger for Monroe's approval and the pressure to avoid public shame intertwine into a socially freighted engine that drives musicians to develop rich knowledge sets for ensemble coordination. And this produced seasoned musicians whose core identity rests upon their shared experience adapting to Monroe's rhythmic whims. Hence, the musical coordination demanded by "Muleskinner Blues" forged fraternal solidarity among Monroe's musical progeny, cementing his status as the genre's patriarchal figurehead.

[0.6] To make this argument, however, I must first address how musicians survived "Muleskinner Blues" in a more concrete fashion, explicating the practical musical knowledge needed to accomplish this feat. Inspired by the work of cognitive scientist Edwin Hutchins (1995), who developed a theory of distributed (or group) cognition by studying navigation teams in the U.S. Navy, I develop a framework for analyzing how ensembles think together in metrically flexible situations. That framework unfolds across six analytical vignettes exploring a corpus of 165 performances of "Muleskinner Blues" throughout Bill Monroe's career (**Example 7**). The first vignette reviews and expands upon an analysis of "Muleskinner Blues" by Jocelyn Neal (2009, 33–60) to specify the nature of the song's metric challenges. Through Neal's analysis, we will come to see that performing metrically crooked pieces in ensemble settings requires a set of cognitive tools for bringing different metrical interpretations into agreement. The second vignette then explores the rich knowledge system underpinning performances of this song, exploring how bluegrass musicians establish common understandings of the situation at hand. The next three vignettes explore processes of cueing or collective signaling: vignette 3 offers a preliminary view of collective change as a matter of fixing one's position to melodic anchors; vignette 4 develops a theory of cue processing guided by schemas representing the expected structure of cueing events; and vignette 5 attends to the dynamics of attention, preparation, and action that unfold as Blue Grass Boys try (and sometimes fail) to change harmonies together in the first verse. The sixth and final vignette exposes how the song's flexible structure fostered acts of hazing in the band, showing, in turn, that any structural account of ensemble performance is invariably also an account of social dynamics. Interviews with Blue Grass Boys Peter Rowan and Mark Hembree fill in the cognitive and social picture sketched out in these vignettes, establishing what John Covach calls the "positional listening" of a picker engaged in the performance of "Muleskinner Blues" (2020). Finally, a postlude draws together threads from each vignette to expose the special configuration of metrical crookedness, ensemble precarity, and egocentric hierarchy that links musical and social action in Monroe's ensemble, actions anchored firmly to a competitive ideology of bluegrass masculinity.

[0.7] This paper contributes to several fields of musical scholarship. Most directly, the paper builds upon existing histories of both bluegrass music (Rosenberg 2005) and "Muleskinner Blues" (Neal 2009), offering a new reading of perhaps the most storied item in the bluegrass canon. Likewise, the paper contributes to a growing body of work that combines analysis, cognition, and cultural

study to explore collective action in musical ensembles (Brinner 1995; Rings 2013; Michaelson 2019; Tilley 2019; Timmers, Bailes, and Daffern 2022). Finally, the article exposes the unique configuration of cognitive, musical, and social pressures that transform Monroe's performances into hyper-masculine ideological machines. In doing so, it invites analysts to reflect on how this configuration could be otherwise; how, that is, different musical structures might motivate other social relationships. I hope this paper inspires analysts to consider how the dynamics of performance in any musical ensemble erects a network of social relationships through which genre ideologies are distributed and reified.

Vignette 1: Crooked Tunes in Ensemble Performance

[1.1] As any student of country music knows, Monroe inherited his signature crooked tune from Jimmie Rodgers, who cobbled together what we know as "Muleskinner Blues" from the materials of Black blues singers like Tom Dickson and Alger "Texas" Alexander. Jocelyn Neal, in her 2009 monograph *The Songs of Jimmie Rodgers: A Legacy in Country Music*, provides a chapter-length history of "Muleskinner Blues" as it moved across myriad artists and genres. Her analysis of Monroe's studio recording from 1940 will serve as a useful starting point for this investigation, one which skillfully summarizes prevailing interpretations of the song's historical status while emphasizing the arrangement's ensemble virtuosity. To accompany this discussion, **Examples 8** and **9** adapt Neal's transcriptions of the first verse of "Muleskinner Blues" as recorded, respectively, by Rodgers and Monroe.

[1.2] Neal begins by summarizing the historical basis of Monroe's myth:

> Fans of bluegrass know the story by heart: Bill Monroe succeeded in landing a slot on the Opry in 1939, and a few years later he put together the seminal band that crafted a new musical style and eventually a distinct musical genre, earning him the moniker "Father of Bluegrass." In October 1939 Monroe auditioned for the Opry. . . with "Mule Skinner Blues," he then played the song at his debut, and his performance garnered a demand for multiple encores from the audience. On 25 November 1939 Monroe was featured on the network-segment portion of the show and thereafter remained a regular. An extant radio transcription from that 25 November show reveals that Monroe played "Muleskinner Blues" once again, and even at that stage in his career the song was rapidly becoming one of his signature numbers. . . Monroe signed a contract with Victor Records. . . and his band headed to Atlanta for a session on 7 October 1940. The first tune Monroe recorded was "Mule Skinner Blues." (Neal 2009, 52)

As we have seen, Monroe's own narrative centers the "timing" of his arrangement as its genre-generating innovation, which he elsewhere characterizes as an explicit break from Rodgers's rhythmic style: "We don't do it the way Jimmie Rodgers sung it. It's speeded up. . . and we have that straight time to it, driving time" (Rooney 1971, 33).[(4)] The faster pace of Monroe's recording is true enough, but Neal rightly remarks that it "lacks several basic bluegrass characteristics" (Neal 2009, 53), including, most notably, a banjo, whose signature syncopated rolls are a core component of the genre's rhythmic drive (Rockwell 2009). Neal also highlights considerable points of continuity between this recording and Rodgers's original—especially their shared crookedness, which manifests as shifting time signatures in Example 8 and as rhythmically displaced fiddle licks in Example 9. Neal regards texture, not rhythm, to be the most significant difference between these recordings: "what is decidedly, deliciously 'bluegrass' about [Monroe's] recording. . . is the interplay between instruments" (2009, 55–57). Throughout her analysis, Neal continually highlights the ensemble virtuosity present in Monroe's recording, including the "rhythmic intrigue" of the guitar's metrically ambiguous opening gesture, the "melodic counterpoint" created by the fiddle engaging in "a give-and-take with the vocal line," and an active bass line "that adds to the 'drive' of the rhythmic groove" (55–57). Hence, Neal's analysis asks us to make a crucial revision to Monroe's genesis narrative. It asks us to consider that what Monroe found in "Muleskinner Blues" was not so much a fully formed vision of bluegrass rhythm, but instead an opportunity to set a tightly coordinated group of virtuosic musicians loose upon a country-music classic. From this

perspective, the genre's rhythmic language becomes an effect rather than a cause: it is a consequence of distributing virtuosity across a musical ensemble.

[1.3] What happens when crookedness is distributed, when a metrically malleable tune is transferred from the context of a solo performance and into the context of an ensemble performance? This is not a trivial transformation. As Neal emphasizes, soloists like Rodgers operated in a situation where "self-strummed instrumental accompaniments were literally in their own hands, and thus under their own control," such that "when [Rodgers] wanted to prolong a phrase or add a few extra descriptive words to the text, he did so, with little regard to how it affected the accompaniment or the phrase rhythm" (2009, 40). Ensemble performance, on the contrary, necessarily involves interpersonal synchronization and coordination, requiring musicians to make their actions intelligible to their partners.(5)

[1.4] The means by which individuals extend their thinking beyond their own bodies to synchronize with others is known by cognitive scientists as *distributed cognition* (Zbikowski 2019; Kaastra 2020). The concept of distributed cognition was originally developed by Edwin Hutchins in *Cognition in the Wild* (1995), a cognitive ethnography of ship navigation teams. Hutchins's chief insight is that the whole task of ship navigation, whether performed by a solo navigator or distributed across a team, is really a single cognitive computation or "thought," one that answers the question "where am I?" on behalf of the ship (52). Successful task completion in both solo and group contexts involves coordinating information transfer among various media to arrive at a single computational end. From this perspective, the people doing the task become another medium to be placed into coordination, a coordination that requires specialized cognitive operations to achieve. To give one example, a team of plotters can spot multiple landmarks at once where a solo navigator can only work with one at a time, but the team must work to communicate and coordinate their individual perceptions together (holding onto them until called upon to report them through a telephone system operated by a bearing recorder) in a way that a solo navigator does not (194–5; 284). Hence, the team is a distributed cognitive system—a hivemind, if you will—with unique properties of its own, "a sort of flexible organic tissue that keeps the information moving across the tools of the task" (224).

[1.5] What cognitive properties might characterize distributed musical systems? Here's one: polymeter. A cardinal axiom of metrical perception is that individuals cannot think in two or more meters at once (London 2012, 67; Pourdrier and Repp 2013). But groups can. Each person in a group can individually think in whatever meter they wish. What distributed cognition asks us to do is imagine a team of performers—an ensemble—as if it were an individual empowered with the superhuman ability to think polymetrically. And that capacity entails other unique cognitive properties. For instance, precisely because low-level processes of metrical entrainment (Lerdahl 1983; Mirka 2009; London 2012) furnish individuals with unitary metrical frames, those individuals do not typically have to work very hard to bring their own bodies into metrical coordination, to spend mental energy ensuring that their left leg is "thinking" in the same meter as their right. But this is exactly what ensembles must do all the time, as anyone who has lost the beat in a rehearsal or fallen out of step with a dance partner can attest. Hence, if ensembles can think polymetrically, then they also need additional cognitive machinery to ensure that players are metrically aligned (Keller, Novembre, and Hove 2014). This, in essence, is what it means for a distributed system to have unique cognitive properties.

[1.6] With these distinctions in mind, let us attend more closely to the differences between "Muleskinner Blues" in its solo and ensemble settings. Rodgers, Neal remarks, performs "Muleskinner Blues" with a "unique phrase rhythm" born from "the combination of free storytelling and the regular, almost automatic. . . rhythmic style of his guitar playing" (2009, 40), a combination that helps chart a course through the crooked metrical thicket. Rodgers's guitar playing is based on an "oom-pah" pattern modeled schematically in **Example 10**. With its bass-note pairing of accented high chord roots ("oom") with unaccented low 5ths ("pah"), this ubiquitous guitar pattern forms what Stephen Hudson calls a *metering construction*—"a set of learned associations between a specific sonic pattern, a specific way of moving, and a specific beat interpretation" (Hudson 2021, 123)—that helps clarify Rodgers's metrical stylings. A listener

attuned to this pattern, that is, knows to anchor the strong beat of a duple meter to every "oom" bass and a weak beat to every "pah" bass. The crooked seams of Rodgers's "Muleskinner Blues" arise mostly when this metering construction rubs up against a similarly ubiquitous pairing of strong beat to harmonic change: moments like m. 16 and m. 21 of Example 8, where an "oom-pah" cycle is interrupted by a harmonic change, creating a "strong beat early" effect that Joti Rockwell (Rockwell 2011, 61–62) calls a "first order duple" form of crooked disruption. (A slightly different crooked situation occurs in m. 22 where the unaccented "pah" bass note is not followed by the expected return to an accented "oom" bass, a disruption through omission that Rodgers responds to with a downbeat-confirming walking bass line previously heard in m. 17). Insofar as Rodgers's chord changes seem to be anchored to the arrival of important melodic notes (G at m. 14, D at m. 17, G at m. 20, and E as an accented passing tone in m. 22), we could effectively translate the song's metrical framework into the following performance description: Rodgers vamps on oom-pah guitar patterns until his voice arrives at a moment of harmonic change, at which point he restarts the vamp on the new chord.

[1.7] The "oom-pah" pattern is central to Monroe's arrangement as well, where it is distributed between bass (which takes the titular, meter-anchoring "oom" and "pah") and guitar (which plays rhythmically embellished chordal "chucks") played respectively by Bill "Cousin Wilbur" Westbrooks and Bill Monroe. By itself, this distributed "oom-pah" pattern is orders of magnitude more regular than Rodgers's own, but complications arise when it is considered against Tommy Magness's fiddle ostinato. This ostinato first appears in m. 6 of Example 9 and then returns displaced by a half measure in m. 13, suggesting that his—and only his—perception of the downbeat has shifted. That is, where Monroe and Westbrooks feel a strong beat, Magness feels a weak beat, and vice versa. This is precisely the kind of polymetrical perception and performance that distinguishes solo from ensemble performance: Rodgers's crooked performance, though unfolding through an accentual conflict between "oom-pah" bass and harmonic change, cannot be said to extend from a cognitive conflict within the performer, since his hands are not capable of "thinking" differently from his voice. But this cognitive conflict becomes very real once the musical work of one body is distributed to a trio of musicians working together. And so, while Neal interprets Magness's actions as a direct outgrowth of Rodgers's "loose phrase rhythm and large-scale metrical shifts" (2009, 55), I would emphasize instead that this is a fundamentally new kind of polymetrical behavior, one that could only emerge once this crooked tune was translated into the distributed cognitive context of an ensemble performance.

[1.8] Such polymetrical behaviors, which we will examine in greater detail in vignette 3, offer just one example of the vast differences between individual and distributed cognitive systems. In a distributed system, different members of the team may have different frames and schemas for understanding events, unequal access to perceptual evidence, diverse predispositions and beliefs, distinct patterns of communication, and varying degrees of persuasiveness or authority in their communicative acts, all of which produce cognitive properties and behaviors that are unique to team performances (Hutchins 1995, 248–50). Collectively, such differences raise a host of questions about how the ensemble performance of a crooked tune like "Muleskinner Blues" works, questions which will occupy the remainder of this paper. How do individual Blue Grass Boys glean action-laden understandings of "Muleskinner Blues" as they perform? What mechanisms aid these musicians in synchronizing their individual understandings to ensure compatible actions? Given that Magness's displaced fiddle line was apparently not regarded as a mistake (at least not one worthy of correcting with another take), when and how do divergent behaviors within an ensemble become recognized as problems?(6) What remediation procedures are available to correct recognized problems during performance? And, finally, what social processes unfold as these musicians play, learn, judge, and coordinate together under the watchful eye of Bill Monroe? To answer these questions, the next vignette explicates the knowledge base of a seasoned bluegrass musician, detailing the individual and ensemble skills needed to survive a performance of "Muleskinner Blues."

Vignette 2: Finding Common Ground

[2.1] To achieve coordinated performance, ensemble musicians rely on intricate cognitive machinery centered on an interlocking trio of cognitive-motor skills—anticipation, attention, and adaptive response—as mediated by individual goals, prior knowledge, and social capacities (e.g., empathy) (Keller, Novembre, and Hove 2014). Much of this machinery, such as the alignment of pulse microtiming, operates pre-attentively and is experienced as automatic (2014, 2), allowing musicians to focus their conscious attentional resources on cultivating and negotiating what Linda Kaastra, following Herbert Clark (1996), calls the *common ground*, "the mutual beliefs, knowledge, assumptions, and awareness that form the basis for. . . joint activities" (Kaastra 2020, 105).(7) This common ground is, in turn, built upon an immense *knowledge base*, a "cauldron of devices" that, in Jeff Pressing's definition, includes "musical materials and excerpts, repertoire, subskills, perceptual strategies, problem-solving routines, hierarchical memory structures and schemas, generalized motor programs, and more" (Pressing 1998, 53). For a bluegrass musician, the knowledge base might include relevant harmonic schemes (Stoia 2013), song types (Rosenberg 2005), metrical norms (Keller 1999; Rockwell 2011), actions such as banjo rolls (Adler 1974) as well as the motor routines needed to produce them (Rockwell 2009), performance etiquette (Kisliuk 1988), and much more. The knowledge base relates to the common ground as past information relates to present understanding: information stored in long-term memory (knowledge base) offers materials for constructing a relevant mental model (common ground) for the present task.(8) Crucially, however, the common ground is a *shared* mental model while the information used to build it is housed chiefly in an *individual's* memory, figuring the pipeline from knowledge base to common ground as a pipeline from individual to distributed cognition. Hence, a cognitively informed analysis of ensemble performance should interrogate what the performers understand to be true about the current musical situation and how this understanding drives their perceptions and actions.

[2.2] To sharpen our understanding of these dynamics, **Example 11** transcribes an excerpt from a 1971 studio recording of "Muleskinner Blues," providing a useful window into the "Muleskinner" status quo as it was understood by seasoned Blue Grass Boys. The goal of the present vignette is to draw the song's basic rules of engagement out of this excerpt, to specify the nature of the common ground that underpins its performance. We may begin by approximating that common ground as a distributed version of Rodgers's vamp-and-wait approach to crooked tunes. I capture this understanding in the event segmentation situated above the musical notation in Example 11. In essence, I posit that the Blue Grass Boys viewed the passage as a scripted sequence of chord-events, each of which is to be filled in with chord-appropriate duple-meter vamps or licks, and the boundaries of which are anchored to the circled melodic notes. So, for instance, the band begins vamping on a tonic G major chord in m. 47, an action they sustain until Monroe's accented high C arrives at the downbeat of m. 52, at which point they shift to a subdominant C major chord.

[2.3] This common ground, as mentioned, is fundamentally a distributed cognitive framework. It is a "thought" produced by the Blue Grass Boys as a composite unit, capturing their collective representation of the current situation. But that representation is synthesized from a vast array of information pulled out of the knowledge base of individual musicians. **Example 12** sketches this array, providing a partial list of relevant knowledge that is multivalent in its content—embracing knowledge about *referents*, *roles*, *harmony*, *meter*, *actions*, and *cues*—and ranges considerably in its specificity. Some knowledge, that is, is *style-relevant*, applying widely across the bluegrass genre, while other knowledge concerns the minute details of playing with Bill Monroe (*band-relevant* knowledge), playing "Muleskinner Blues" (*song-relevant* knowledge) and playing this particular part of "Muleskinner Blues" (*passage-relevant* knowledge). The *role* knowledge domain, for instance, concerns the norms of interaction among Blue Grass Boys, including style-relevant information about the normative function of each instrument in a bluegrass ensemble (Cantwell 1984, 100; Rockwell 2009, 150–53), band-relevant knowledge about the competency and authority of each musician in this Monroe-fronted ensemble, song-relevant knowledge about the distribution of solo and accompaniment roles in this particular song, and passage-relevant knowledge that, at m. 57, the role of lead soloist transfers from Monroe (as singer) to Kenny Baker (as fiddler). Though the domains are listed separately in Example 12, they regularly impinge upon, shape, and dovetail into one another. Thus, what I call the *action pool* is a mental set of executable gestures, licks, or vamps deemed appropriate for the situation at hand, the content of which is highly constrained by role (many actions are instrument-specific), harmony (many actions are harmony-specific), and meter

(many actions are meter-dependent) knowledge domains.[(9)] Similarly, because the position of strong beats in crooked tunes are flexible and anchored to specific melodic events, passage-relevant *metrical* knowledge (knowledge about where specific strong beats will occur in this particular passage) is functionally identical to passage-relevant *cue* knowledge (knowledge about what signals will trigger chord changes). The conceptual elision of meter and cueing is perhaps the central structural conceit of "Muleskinner Blues," driving much of the socio-musical engine that interests me in this article. Due to its centrality, the cue domain will be the central focus of vignettes 3, 4, and 5.

[2.4] For now, let us use this sketch of the knowledge base to give greater specificity to the subtleties of common ground construction. **Example 13** provides a bird's-eye view of the structural script (Schank 1977; Byros 2015) that grounds a performance of "Muleskinner Blues," capturing the song's sectional divisions and principal harmonic moves while also outlining the special actions that frame its beginning and conclusion. This script is song-relevant knowledge about formal structure—what I call, following Pressing (1998), the *referent domain*—drawn up as common ground for the performance. Components of this script index packets of knowledge stored elsewhere in the knowledge base. Some of this linked knowledge—like the role-domain pairing of verse to vocal lead and break to fiddle lead—is itself shared as common ground, but other links are individual in character. For instance, at each return to a tonic G-major chord (e.g., Example 11, mm. 47 and 57) James Monroe executes a simplified variant of the ubiquitous style-relevant guitar lick called the "G run" (discussed further in vignette 4). Couched in terms set out above, these actions are passage-relevant action knowledge for James Monroe alone—*whenever the band changes to G major, play a G run*—that, in turn, is the product of ingrained links between the guitarist's song-relevant referent knowledge (where G major chords occur in "Muleskinner Blues") and style-relevant action knowledge (the G run as a characteristic phrase-ending gesture, c.f. Rockwell 2009, 152). In this way, the common ground interfaces with an individual's rich knowledge sets to furnish them with behaviors appropriate for the shared project of performing "Muleskinner Blues."

[2.5] Underpinning this analysis is a methodological assumption that common behaviors evidence common ground: whenever musicians act together, that is, we can assume that they are thinking together. This assumption is not, of course, airtight—not every thought manifests in observable behavior—but it is useful.[(10)] And one of its uses lies in exposing where the common ground fractures. Consider m. 57 of Example 11, where Monroe's vocal entrance triggers a clear harmonic shift to V in Kenny Baker's fiddle line, but not a corresponding harmonic change for James Monroe on guitar or Earl Snead on banjo.[(11)] As with the displaced fiddle ostinato of Example 9, this measure is a place where the ground apparently ceases to be common, where the performers engage in behaviors that suggest different, incompatible readings of the situation at hand. Moreover, given that the same polychordal playing occurs again in the next verse, it may well be the case that these musicians are unaware of their divergent thinking at all. That is, Baker may assume that his bandmates are changing to D along with him, while Snead and James Monroe may be unaware of Baker's harmonic moves.

[2.6] Such polychordal behaviors, like the polymetrical behaviors examined in vignette 1, are hallmarks of distributed musical systems, showing the ensemble as a cognitive unit perceiving the situation in multiple incompatible ways at once.[(12)] But if group performances incentivize participants to build common ground and think collectively, then how do such incompatible readings emerge, propagate, and persist? In a personal interview, guitarist Peter Rowan—who, like Baker, always changed to V during his tenure with the Blue Grass Boys—points us towards an answer.

> I heard [Monroe] sing a $\hat{5}$ note and then I'd play another V right there. That's how I originally played it. I thought that's how everyone played it, but sometimes the part is simplified to just two chords instead of three. I just chose to play those V chords because I heard the fiddle play it. . . It wasn't written down. It's what you brought to Bill, you know what I mean? If he said "Muleskinner Blues," you had to know how to play that. You weren't gonna learn it (*laughs*) from *him*! (Rowan 2024)

Rowan's comments position the band's polychordal behavior as the result of special habits of attention, communication, learning, and memory. Monroe, averse as he was to rehearsals, expected Blue Grass Boys band members to learn songs on their own. In doing so, he denied his band a space to express their individual understandings, reconcile differences, and work towards a unified collective structure. Left to their own devices, individual Blue Grass Boys needed to cobble together song-relevant referent knowledge from their individual perceptions and experiences. Rowan's attention, he tells us, was drawn both to the melodic structure and to the harmonic actions of the fiddle, from which he gleaned a structural representation of the verse that contained V chords. Other Blue Grass Boys, attending to different information and/or interpreting their musical perceptions differently, developed a different representation that did not include V chords. (In Example 13, any such idiosyncratic or variable script information is marked by an asterisk.) Once established, these representations influenced later perceptions by shutting out script-atypical information: as Rowan suggests, most Blue Grass Boys likely assumed that how *they* played the song was how *everyone* played it. The band, then, perceives the harmonic situation in non-compatible ways because they have non-compatible scripts for the song in their respective knowledge bases. Those who believe there is a V chord at the end of each verse hear one and play one; those who do not hold this belief hear differently and play differently.

[2.7] We can conclude, therefore, that the Blue Grass Boys did not consider absolute harmonic agreement to be a central feature of their common ground. Instead, a gradient sense of harmonic agreement seems to underpin their performance: so long as *most* musicians were close *enough* in their harmonic behaviors, the performance could continue. In this, the ensemble as a distributed cognitive unit works analogous to an individual engaging in goodness-of-fit categorization (Rumelhart 1980, 41–42). Just like a single odd feature rarely disturbs an individual's ability to categorize an experience, so too was Baker's lone V chord not, apparently, divergent enough to threaten the band's sense of collective agreement. But what, exactly, does it mean to say that such a cognitive process is operating at a distributed, rather than individual level? It is to regard each musician as holding a bit of processing power within the larger distributed system. To say that the *ensemble* does not notice a diverging behavior could therefore mean that no *individual* notices the diverging behavior. But it could also mean that one or more individuals do notice, but do not propagate their awareness through the system, perhaps because they do not care enough, cannot communicate, or haven't the decision-making authority to act on what they hear. Whatever the case, the ensemble as a whole does not become aware of an individual's diverging behavior. Hence, an individual's cognitive processes become distributed processes when they are entangled with interpersonal dynamics of communicationl, joint attention, and coordination.

[2.8] From this analysis, we see how even relatively straightforward acts of ensemble cohesion are cognitive achievements in which vast bodies of knowledge are synthesized into robust yet flexible models for collective action. Such shared models—or common ground—involve not just what musicians think is true about the present situation, but also what they think their bandmates think is true and, crucially, what aspects of aligned thinking are felt to matter for the task at hand. Musical behaviors provide concrete evidence for how this common ground is built, negotiated, and contested, offering an analytical foothold for studying, a la Hutchins, musical cognition "in the wild." This vignette highlighted one unique cognitive property distinguishing ensemble from individual performance—an ensemble contains individuals whose beliefs about the musical situation can diverge, leading in turn to diverging behaviors—while also showing how gradient alignment heuristics can maintain distributed representations in a manner analogous to individual categorization. But diverging beliefs are not the only source of diverging behaviors in ensemble performance. The next vignette shows how, in fact, a shared understanding of who it is that drives the song's structural center can also provoke musical non-alignment.

Vignette 3: Metrical Position Fixing

[3.1] A common means of reconciling diverging understandings in a socially distributed task is to appoint a leader who, in Hutchins's characterization, is granted "the authority to declare the nature of reality" for the group (1995, 256). In "Muleskinner Blues," it is Bill Monroe who declares the

nature of reality, especially in the verses, where his voice commands the spotlight. More precisely, reality is dictated by Monroe's melodic utterances. The verse is his "vocal playground," in Neal's (2009, 55) apt characterization, where his decisions to draw out certain notes while rushing through others determine a unique shape for each phrase in each performance. From the band's perspective, Monroe's voice becomes an external stimulus that must be correctly interpreted to achieve a coordinated performance. Drawing on language from navigation, the original domain of Hutchins's study, we might regard the melodic notes circled in Example 9 as landmarks that the band uses to fix their position within the song's formal and metrical landscape. Successful coordination can then be viewed as the result of correctly reading these landmarks and employing the correct actions in response. This, in turn, encourages the band to adopt a "set it and forget it" attitude: once an appropriate action has been successfully initiated at the right moment, then the cognitive work demanded by the present event is largely complete, and musicians can relax attentional muscles while almost automatically maintaining their current vamping pattern.

[3.2] **Examples 14** and **15** show two performances of "Muleskinner Blues" bookending the ritualistic "Story of Bluegrass" show at Carlton Haney's Fifth Annual Labor Day Bluegrass Festival in Camp Springs, North Carolina, allowing us to attend to these dynamics more closely.(13) The two excerpts track the behaviors of Bill Monroe (voice), Kenny Baker (fiddle), and Bill Yates (bass) at the start of the first verse. The principal phenomenon this analysis will explain is the different degrees of metrical coordination seen in the two excerpts: whereas the first performance in the set (Example 14) shows a situation in which all parts are metrically aligned, the performance from the end of the set (Example 15) shows instead a polymetrical situation in which the accented notes of Baker's fiddle line fall on unaccented bass notes. To facilitate this analysis, Monroe's vocal line is represented as an uninterpreted reality shorn of barlines at the top of each excerpt and arrows depict the flow of information from a cueing stimulus to a triggered action.(14) Accompanying the excerpts is a model of the component events as conceived by each individual player, shown in **Example 16**.

[3.3] To begin, notice that each musician has a different number of actions to perform. While Monroe executes two vocal wails, Yates vamps away on a single G major oom-pah pattern throughout the excerpt; meanwhile, Baker moves through two intricate melodic actions (solo break and verse fill), between which is a central point of chordal stasis. Yates's bass vamp and Baker's two intricate melodic actions both have clearly defined duple pulse profiles and are identically executed in both performances: once the relevant pattern begins, neither musician makes any adjustment to their playing. The diverging meters between the two performances can therefore be traced to Monroe's flexibly timed vocal wail, and the process by which Baker fixes the start of his verse fill to its concluding note. Baker, that is, aims to align the syncopated start of his verse fill with the final syllable of Monroe's "captain." Since this trigger occurs one beat earlier in the second performance relative to the first, Baker slides effortlessly into a metrical position that is fully at odds with Yates's bass line. The band begins to think and play polymetrically, and downbeat alignment consequently ceases to be common ground.

[3.4] To survive "Muleskinner Blues," perhaps the most important competency for a Blue Grass Boy to develop is the ability to effectively read Monroe's signals as he winds his way through the song's crooked contours. The analysis above shows, however, that different musicians have different tasks to perform, and therefore might fix their metrical positions to different parts of Monroe's vocal stimulus. It is Yates's job to be in sync with Baker at the end of the opening fiddle break so that Monroe has a clear downbeat from which to launch the first verse. Upon Monroe's entrance, Yates's cognitive task is complete, but Baker's is not: he must immediately train his ears back to Monroe's voice and listen closely for his entrance. Baker and Yates fall out of sync because they are not listening to each other, which occurs because neither determines the other's metrical reality. Rather, they both funnel their attention to the one who does decide that reality—Monroe—but they do so only when the nature of that reality is pertinent to some particular task. If no such task is required, the musicians do not seem to mind, and perhaps do not even notice, that Monroe has shifted the metrical reality around them.

[3.5] On the surface, the polymetrical behaviors analyzed here are quite similar to the polychordal behaviors examined in the previous vignette. Both, after all, involve cases where the band is not thinking together. But it is important to note that these two outwardly similar musical behaviors are produced by mental processes that are quite different. In vignette 2, I argued, Blue Grass Boys diverged harmonically due to their different individual beliefs about the song's harmonic content, tagged in turn to distinct scripted representations of the song in their knowledge base. The metrical divergences analyzed here, on the other hand, have nothing to do with diverging beliefs and everything to do with diverging patterns of attention. Where a Blue Grass Boy placed their downbeat, that is, was a function of when they needed to check into Monroe's vocal stimulus. And this, in turn, was a function of when, in the band's shared understanding of the song, each musician needed to step up and perform some necessary musical action. Different beliefs, roles, perceptions, interpretations, authority, memories, and ways of communicating are at play here; distributed cognition asks us to be alert to these and many other differences among individual performers, to attend to the unique cognitive tools musicians must develop to negotiate them, and to be sensitive to the unique musical phenomena that emerge through that negotiation.

[3.6] Taken together, the first three vignettes have shown that the common ground on which the Blue Grass Boys met for their crooked performance of "Muleskinner Blues" was synonymous neither with harmonic agreement nor metrical alignment. More fundamental than either of these factors was a shared sense that each musician must funnel all their attention to Monroe to derive appropriate musical actions for the situation at hand. What mattered, in other words, was not that every musician was perfectly in sync with one another, but rather that each was appropriately in sync with Monroe. Monroe thereby becomes the song's structural center, his melodic actions the tissue that binds his band together in common musical purpose. Thus centered, he is invested with uncommon musical power that, as we will see, he did not always wield magnanimously. The second half of this article builds toward a cognitive analysis of this power and the musical hazing it enabled, a power that rests on a delicate dance of attention guided by musical cues. That cue-based dance was introduced already in this vignette, and the task of the next vignette is to deconstruct its cognitive machinery.

Vignette 4: Cue schemas

[4.1] **Video Example 1** shows the opening seconds of a televised performance of "Muleskinner Blues" from 1972, giving focus to the song's gradual, layered assembly. Monroe, framed in closeup, initiates the performance with a free-time mandolin cadenza, lingering on a high tremolo before cascading to a resonant open G two octaves below.(15) The camera recedes as Monroe bends his gaze leftward, signaling Joe Stuart to step in and set the tempo with that most characteristic of bluegrass guitar licks: a G run. This three-beat lick, played in strict time, extends a metrical invitation to the ensemble, one that Monroe, together with banjoist Jack Hicks and bassist Monroe Fields, accepts and locks into place with a chordal vamp on G major. With the metric gears now in motion, Monroe's gaze shifts rightward to Kenny Baker, who launches explosively into a virtuosic fiddle solo, completing the texture. Across this short, seven-second clip, Monroe and his Blue Grass Boys erect a metrical scaffold through a nimble game of coordination, one guided by knowing glances, intention-laden licks, and memorized action sequences—in a word: cues.

[4.2] Cues are perhaps the central, defining component of what Benjamin Brinner (1995, 183) calls the "interactive system" of ensemble performance, or "the means by which performers communicate, coordinate, and orient themselves." They are mechanisms for producing a change in collective behavior centered around the prototypical scenario modeled in **Example 17**. In this scenario, a performer works to determine a contextually appropriate future *action* by decoding the temporal *location* and musical *content* of an upcoming event from a cueing *stimulus*, aided by information from their knowledge base and primed by an attention-orienting *preparation* phase.(16) To illustrate, **Example 18** models Video Example 1 as a sequence of four basic musical events—mandolin cadenza, G run, chordal vamp, and fiddle solo—presenting three event boundaries and, hence, three associated moments of a cued change in musical behaviors. At each of these boundaries, one or more players run the decoding process depicted in Example 17, deducing from

the musical content of the preceding event information about what their next action should be and when they should execute it. How does this happen?

[4.3] Brinner (1995, 186–87) points out that cues vary in their degree of determinacy and regularity across several dimensions: while some cues may be predictable and imply a narrow range of actions, others may be unexpected, novel, and ambiguous in their implications. The opening actions of "Muleskinner Blues" are guided by cues that are relatively predictable in their content, timing, and action implications. With few exceptions (one of which is analyzed in vignette 6), the Blue Grass Boys execute the event sequence depicted in Example 18 in basically the same way throughout Monroe's mature career. This predictability, in turn, would allow seasoned Blue Grass Boys to develop robust knowledge about how each event should unfold and what they need to do at its end, a kind of knowledge I call a *cue schema*. "Schema," writes Robert Gjerdingen (2007, 11), is "a shorthand for a packet of knowledge, be it a prototype, a well-learned exemplar, a theory intuited about the nature of things and their meanings, or just the attunement of a cluster of cortical neurons to some regularity in the environment." A cue schema, therefore, is a packet of knowledge attuned to the regularities of a particular cueing situation. The three event boundaries of Example 18, for instance, are associated with three cue schemas—here named KICKOFF, BAND START, and FIDDLE LAUNCH—each of which can be understood as a bundled list of instructions for what to do when the current event ends. That understanding is modeled in **Example 19**, which enumerates the schema's participants and provides both textual and music-notational representations of the actions to be performed. Thus, the KICKOFF cue schema directs Joe Stuart (the ACTOR) to wait for the end of Bill Monroe's mandolin cadenza (the STIMULUS) and then perform a G run (the ACTION). Crucially, the musical notation must not be seen as the notes that the musicians actually play in Video Example 1, but instead as what the schema's ACTOR(S) expect the STIMULUS to be and what ACTION they *intend* to play in response. These cue schemas, in other words, are ideal representations of how these situations should go, representations that this incarnation of the Blue Grass Boys have built through years of experience listening to and playing with Monroe.

[4.4] As idealized mental representations, cue schemas guide the processing model of Example 17 by supplying its various components with default values. The processor, that is, asks a set of questions about an upcoming event—What do I DO? AT what point do I do it? What STIMULUS will tell me this information?—and the relevant cue schema provides a default set of answers to those questions, pre-filling content and location slots and sketching out the course of the expected stimulus. The expectations contained in the cue schema thereby furnish the ACTOR with a robust set of heuristics to guide their performance, which in turn means that, so long as nothing unexpected occurs, the process of changing behaviors in response to a cue becomes a simple matter of following the current event to its expected conclusion and executing an action that is already at hand.

[4.5] Let's take a close look at Joe Stuart's G run and examine its function in our "Muleskinner" scene. As the genre's most iconic guitar lick, omnipresent in the playing of guitarists like Lester Flatt and featured prominently in standards like "Uncle Pen," the G run is itself a schema embedded deep into the knowledge base of bluegrass pickers and fans alike.(17) It is a core piece of bluegrass vocabulary and is thereby able to perform a variety of conceptual functions. Stuart's KICKOFF schema, for instance, pulls the G run out of his action pool and preloads it into the content slot of the cue processor, which frees up attentional resources to focus on other pertinent information. Stuart, that is, knows already what he will play, and needs only to process when to play it by following Monroe's cadenza to its conclusion. Upon its performance, the G run becomes immediately entangled with the BAND ENTRY cue schema, acting most obviously as the sounding stimulus analyzed indexically by its central processor. But the processor already knows what it is looking for: the band pulls prior knowledge of "Muleskinner Blues" into their preparation phase, gleaning the G run as the object of their attention well before its first note is sounded. Finally, although Kenny Baker's fiddle solo is measures away, the G run still interacts with the FIDDLE LAUNCH cue schema by establishing the song's tempo and meter. This information is clearly crucial to Kenny Baker, who, in the seconds before his entry, notably taps a furious quarter note pulse in an effort to solidify his entrainment. In these ways, a single item of musical vocabulary sits

at a nexus point where preparation, action, and signal intermingle, bringing rich knowledge structures into play in service of a nuanced coordination problem.

[4.6] The utility of a cue schema lies in the expectations it loads into the cue processor; expectations that do not have to be precisely fulfilled to be useful. To illustrate, consider a 1964 performance of "Muleskinner Blues" at the University of Maryland, transcribed in **Example 20**. At this show, where country singer Lloyd George (under the alias Ken Marvin) filled in as a temporary guitarist, "Muleskinner Blues" starts with a notable glitch: the G run never materializes.(18) In its absence, the Blue Grass Boys scramble to kick the song off: Fiddler Benny Williams leaps in early to fill up the silence with high G wails while Monroe lays down offbeat mandolin chops to lock in the song's meter in preparation for Joe Stuart's (this time on banjo) and bassist Paul Sher's entry a measure later. Notable here is that Stuart and Sher still manage their actions with a version of the BAND ENTRY cue schema whose variables are adjusted on the fly to accommodate the unexpected situation. Cast in the terms set out above, their processor has been primed in the preparation phase to expect a G run, but, since it receives no such stimulus, it looks for an alternative source of metrical information to elaborate into an appropriate moment of action. This is precisely what Monroe provides with his backbeat chops, which supply analogous, style-relevant metrical information in place of the G run that triangulates his band and allows them to reconvene at a downbeat. Monroe's actions exemplify a common recovery strategy within distributed cognitive systems, in which teams "compensate for local breakdowns by going beyond the normative procedures to make sure that representational states propagate when and where they should" (Hutchins 1995, 228). Monroe's chops, that is, propagate precisely the metrical information sought out by the BAND ENTRY cue schema, thereby mitigating a catastrophic launch into a mere two-measure hiccup.

[4.7] In vignette 2, the structure of "Muleskinner Blues" was characterized as a scripted sequence of flexibly timed chord events. Cue schemas arise at the inflection points of that structural script, marking moments where attention is needed to bring about some behavioral change. The examples studied in vignettes 2 and 3 are littered with such inflection points, indicated in Examples 11, 14, and 15 with circled melodic notes. We can now characterize those circles as the AT instruction of an associated cue schema, which is typically located at the end of a melodic gesture at least two beats in length. Such lengthy cues give musicians ample time to recognize the cueing stimulus and ready the appropriate behavioral change. And herein lies the key to surviving "Muleskinner Blues": the metrical flexibility of the whole is counterbalanced by the comprehensibility and predictability of the component cues. However, not all stimuli are this lengthy; not all cues are so easily processed. The next vignette explores how the Blue Grass Boys grapple with the challenges posed by more abbreviated cue stimuli.

Vignette 5: Coordinating Chord Changes

[5.1] If Monroe is invested with the authority to declare reality on behalf of the band, then one could presumably sketch the song's harmonic rhythm by attending to his mandolin part alone. Consider the position of the first harmonic change from G to C in verse 1. In those performances where Monroe's mandolin playing is audible at this moment—as in **Example 21**—it is evident that Monroe positions this chord change squarely on the word "need."(19) This is the reality Monroe seems to declare for the Blue Grass Boys, and it is a difficult reality indeed! For in this reality, a mere 250ms—an eighth note at 120 bpm—separates the start of the cueing stimulus ("Do you. . . ") from the moment of action (". . . need"), leaving precious little time for a musician to process and respond to the stimulus at hand. Furthermore, as shown in **Video Example 2**, Monroe scarcely gives any visual information to his musicians, preferring to stand statuesque by the microphone rather than forecasting his actions with glances or physical gestures. Apparently, Monroe expected the Blue Grass Boys to determine where to change harmonies from his voice alone.

[5.2] To see how the Blue Grass Boys coped with this challenge, **Examples 22–28** captures the behaviors of seven different banjo players as they responded to this cue. As we can see, five of these banjoists change to C major two beats later than Monroe, arriving at this chord at the end of his vocal utterance (on "skin") rather than at the beginning (on "need"). In the previous vignette, I

pointed out that most cues in "Muleskinner Blues" work in precisely such an end-accented fashion, giving musicians space to ready their actions as well as a predictable stimulus to time its execution. Indeed, it seems that many Blue Grass Boys, especially those who joined Monroe after 1970, simply believed that the C major harmony begins at "skin" rather than "need," normalizing the challenge of this chord change altogether. For instance, all three of the banjoists shown in Examples 26–28—Butch Robins, Blake Williams, and Dana Cupp—change harmonies at this later location in every recording in which their part is audible.(20) This later interpretation of the harmonic change is especially useful for those musicians who, due to Monroe's mercurial vocal timing, find themselves one beat displaced from the song's duple cycles. Both Vic Jordan (Example 24) and Dana Cupp (Example 28), for instance, have time to realize that their duple vamping patterns are no longer aligned properly to Monroe's downbeat pattern, break that pattern off and, in Cupp's case, deploy an appropriate lead-in one beat in length to bring his playing back into proper alignment.

[5.3] The performances by Bill Keith (Example 22) and Lamar Grier (Example 23), on the other hand, show that some musicians did indeed share Monroe's understanding of the chord's location and, moreover, were able to leap with seemingly superhuman agility into harmonic action. Grier's response from 1967 is particularly instructive since he initiates a stepwise lead-in (G–A–B–C) well ahead of Monroe's vocal re-entry. This suggests that Grier is thinking ahead, anticipating Monroe's next move rather than passively waiting for and reacting to it. Underpinning Grier's proactive behavior, I might suggest, is a nuanced set of expectations trained on the statistical norms of Monroe's timing. Those norms are captured in **Example 29**, showing the duration range for both the entire musical segment marked X in Example 24 (an instance of segment X1 from Example 2) as well as a subsidiary segment Y capturing the rests between Monroe's vocal utterances for all 16 shows in the corpus in which Grier performed. As the example shows, while segment X was performed with some flexibility, the length of segment Y was practically fixed: with only two exceptions, Monroe always rested for exactly 4 beats between vocal segments in the two years that Grier performed in the band.(21) Grier, in other words, could be supremely confident that once Monroe slid his vocal wail to the chordal seventh, the next harmony was precisely four beats away. It is this knowledge, gleaned from statistical learning and likely felt as intuition rather than conscious thought, that allowed Grier to respond proactively to Monroe's singing.

[5.4] Of course, not every musician was as lucky in this respect as Grier, for Monroe did play with the duration of this span throughout his career. Still, several musicians show similar kinds of anticipatory behaviors between Monroe's vocal gestures, suggesting that they too understood this span as a crucial zone of preparation. Consider the actions of fiddler Kenny Baker and bassist Monroe Fields in Video Example 2, transcribed in **Example 30**. Note first that the two musicians begin this excerpt out of sync—having been driven to different downbeats through the process described above with reference to Example 15—but they are brought back in sync at the harmonic shift, which they read together with Monroe in its earlier position (on "need"). Like Jordan and Cupp, both musicians prepare for the chord change by breaking out of a prior vamping pattern, but here, their breakout precedes Monroe's re-entry. Fields, for instance, abandons his two-note oom-pah pattern for a pedal point on G the moment he hears Monroe slide his voice to the chordal seventh. This is a good choice on Fields's part: not only is he no longer committed to a two-beat pulse cycle, but his actions become physically simpler, freeing his hands to get ready for the coming chord change. Baker's fiddle part, though more intricate, evidences a similar process of behavioral simplification. When Monroe hits F natural, Baker starts an ostinato pattern of three sixteenth notes, creating a hemiola effect that lasts four beats. Only after this metrically dissonant ostinato runs its course does Baker shift to a pattern that's just one beat long, continuously landing on an accented A that serves as a jointly dissonant bridge between the preceding G major and the ensuing C major harmony. Hence, both Baker and Fields use the span between Monroe's vocal utterances to reduce the complexity of their musical behaviors, setting them up for a successful coordinated action upon Monroe's re-entry.

[5.5] These analyses show that there were several different ways in which the Blue Grass Boys approached this chord change. These approaches are summarized in **Example 31** as a trio of cue schemas. The first cue schema is the one initially posed by a face-value reading of Monroe's mandolin playing: an UNPREPARED EARLY CHANGE to C major triggered by an upbeat vocal

stimulus lasting two sixteenth notes. This is a schema possessed by a perceptive but inexperienced musician who understands Monroe's intention but does not yet have a robust set of song-specific knowledge to support their performance, a musician like Greg Kennedy in the performance transcribed in **Example 32**. Due to the brevity of its stimulus, it is an inherently inadequate schema for the situation it models; those who frame the situation in this way likely experience it as a sensation of exasperation (he expects me to change *there*?) and passively wait for Monroe's vocal pickup; thus, like Kennedy, they are very likely to miss the chord change. The second cue schema is a LATE CHANGE to C major that extends the cueing stimulus to 2.25 beats and places the action at the end of Monroe's vocal stimulus. This cue schema, with its lengthy, metrically regular stimulus, normalizes the situation by imparting on it the end-accented action structure that characterizes most other cue schemas in the song. It might function in one of two ways within an individual musician's cognitive framework. On the one hand, it could serve as a primary interpretation of the situation, reflecting a sincere belief (contrary to Monroe) that the chord change is located on "skin" rather than "need." On the other hand, it could function as a backup schema facilitating recovery in the event of a mistake, articulating for a musician in possession of an EARLY CHANGE schema the next best spot to change harmonies if they miss their cue. Importantly, the schema motivates the same behavior—a change on "skin"—in either case, and so it is not possible to determine from any one performance how the schema functions. This is precisely what makes the schema valuable as a backup: the behavior it motivates seems intentional, rendering one musician's mistake indistinguishable from the purposeful actions of one who meant to change on "need" all along. Finally, the PREPARED EARLY CHANGE cue schema is a variant of the first schema enriched with statistically learned expectations that promote proactive behaviors. This schema distributes the cognitive load of responding quickly to Monroe's vocal action across a longer span of time by framing the response as a multi-stage process tagged to two stimuli: the chordal seventh (stimulus 1) and the vocal pickup (stimulus 2). The first of these stimuli fills the location slot of the cue processor with a manageably constrained range of values and motivates preparatory behaviors like pattern simplification, which in turn enables greater attention toward and easier response to the vanishingly brief second stimulus. Collectively, these cue schemas gave Blue Grass Boys a flexible yet limited set of frameworks for approaching a challenging situation.

[5.6] The metrical irregularities of "Muleskinner Blues," then, are stabilized through its predictable surface-level cues. Much of the song's crooked structure, we have seen, was immaterial to the musicians who performed it. The ambiguities of Example 1 discussed at the outset of the article, for instance, may vex listeners who demand clear downbeats at all times, but the Blue Grass Boys were more selective in their demands. They needed perceptually clear downbeats only when they had to perform some concrete task that required them to get their metrical bearings. As this vignette has shown, this was not always easy, but it was doable once a musician developed an appropriate set of cue schemas finely tuned to the subtleties of Monroe's timing. Hence to listen from the position of the Blue Grass Boys is to weave deftly in and out of Monroe-centered metrical attention, anchoring to moments of action-oriented alertness and then relaxing into the fluctuating metrical current. But one also relaxes at one's own peril, for, as the next vignette shows, there's danger in these waters.

Vignette 6: Musical Hazing and Bluegrass Masculinity

[6.1] Monroe's iconic opening mandolin cadenza is one of the most consistent elements in "Muleskinner Blues." Every guitarist in the band from 1950 onwards could confidently time their G run by tracing the mandolin's two-octave descent from G5 to G3—every guitarist, that is, except Travis Stewart, who played with Monroe for a short stint from April until June 1971. At a lone performance from the end of his tenure—the kickoff set of Monroe's own bluegrass festival in Bean Blossom, Indiana—"Muleskinner Blues" launches with a decidedly altered mandolin cadenza (**Example 33**). In marked contrast to his otherwise consistent realization of this action throughout his mature career, Monroe here employs an initial double-stop slide, reaches up to B♭5 following the tremolo, blows through a customary rhythmic pause on G4 to land instead on a low B3, and finally arpeggiates up to conclude an octave higher than usual on G4. The guitar-wielding Travis Stewart is momentarily flummoxed—unsure, perhaps, if Monroe means to play more—but he soon

jumps into action with a nervously timed G run. This works well enough to bring in the rest of the band and set the song in motion, although the bassist notably hesitates another few beats before entering, signaling that he too may have been caught momentarily off guard.

[6.2] This jarring, panic-inducing change to the song's iconic opening gesture makes little sense if one takes flawless execution as the central goal of live performance. But, for Monroe, the meaning of performance extended beyond the presentation of an object for audience consumption, it was also about negotiating his band's competitive power dynamics in a public, high stakes environment. Monroe spoke openly about ensemble performance as a competition—"All the way through, bluegrass is competition with each man trying to do the best he can, be on his toes. . . They'll still be friends, but they'll work hard to be better than the other" (Rosenberg 2005, 20–21)—and members of his band report that Monroe would at times actively work against his musicians during live performances. Bassist Mark Hembree, whose story we will explore below, writes that

> If [Monroe] was angry at you, for whatever reason, he could make you miserable. His rhythm was so powerful that he could ever-so-subtly, without breaking stride, make it nigh impossible for you to play. It was like running, being knocked a little off balance and, as you recovered, being nudged again in a different direction and set reeling again. This might go on for days or weeks. Then, about the time you began to believe you'd lost all musical sense, he would get right with you and make you feel like you had your chops back. But it was never soothing. Being right there in sync with him was like grabbing a live wire—exciting, but not really pleasant. (Hembree 2022a, 8)

Seen as part of this larger pattern, Monroe's isolated deviation from the normative track of his cadenza feels less like an aesthetic decision or a mistake and more like musical hazing or bullying. Without warning, he alters key components of the STIMULUS that Stewart expects, disrupting the mental processes he relies on to time the upcoming G run. He thus places his guitarist in a precarious position, foisting the weight of the song's launch—and thereby the opening ceremonies of the entire festival—onto Stewart's shoulders to see if he can rise to the occasion.(22)

[6.3] Hazing, as hazing scholar Hank Nuwer writes (2004, xiv and xvi), embraces any "tasks required for acceptance by a group. . . that in some way humbles newcomers who lack the power or wit to resist." Hazing reifies the social inferiority of initiates, producing in them an addictive "hunger for acceptance" by "minimizing [their] contact. . . with those who are not group members and controlling them to cultivate dependency" (2004, xvi and xviii). The particular control Monroe exerts over his bandmembers in "Muleskinner Blues" works through the cognitive medium of cue schemas: most of the song's cues position the Blue Grass Boys as ACTORS who get their cues from Monroe's vocal STIMULUS. The challenge posed by the song's crooked meter likewise ensures that this STIMULUS held a virtual monopoly over the attentional resources of (especially novice) Blue Grass Boys, minimizing their cognitive contact with others during the song's performance. Dependency, isolation, and subservience were hence critical elements of the song's musical structure, investing Monroe with musical power ripe (and ready) to be abused.

[6.4] Monroe, as argued above, viewed hazing as integral to the competitive spirit of bluegrass. This is a common justification: hazing in masculine spaces is often combative, violent, or athletic in nature, challenging initiates to "act like a man" by demonstrating strength, toughness, competitiveness, self-reliance, and other stereotypically masculine traits (Allan 2004). Indeed, as Bill Hardwig notes (2001, 39), competition was central to the brand of white masculinity that Monroe crafted for bluegrass, easing "Monroe's anxieties about the low-class nature of his music" by "form[ing] a hyper-masculine pecking order (or perhaps a 'pickin'' order). . . with Monroe firmly entrenched at the top." But perhaps even more fundamental than competition to Monroe's vision of bluegrass masculinity was the overarching value he placed on hard work. Asked what he valued in his musicians, Monroe described a principled man whose work ethic drives him out of a feminized domestic world,

> I like to get a man that's got some kind of foundation or something he believes in, and I hope that he's a clean-minded man, you know; one who wants to help the music along and is a wonderful trooper. That means a lot. Of course, I want him to be a good musician that's heard bluegrass. . . [Musicians today] are gettin' maybe a little bit lazy

> and they want to stay home, stay nice. When someone's got wives, of course, their wives is the boss and they have to stay at home. . . They want to sit at home and play a little in front of somebody, and maybe their wives works, you see, and keeps the musician up. And that's the way with a lot of them today. They like to play around home, or clubs, but the money's out on the road. But it's work out there, you know, and I believe in working. (Ewing 2000, 67–68)

Notably, pre-existing stylistic knowledge and musicianship as such are secondary in Monroe's estimation, tucked between a list of moral virtues and a tirade against a breed of laziness born, in Monroe's view, from subservience to women. This is perhaps because bluegrass music itself, Monroe believed, would forge good musicianship in the fires of its own difficulties, just so long as the player was man enough to rise to the occasion. "Bluegrass is a challenge," Monroe once remarked. "You got to get out and work hard, you got to go out and do your best, or it's gonna outdo you." (Hardwig 2001, 38). Hence, a reciprocal relationship emerges between manly virtue and musicianship in bluegrass: to be a good man is to have the work ethic required to play bluegrass, and playing bluegrass well makes you into a good, hard-working man.

[6.5] "Muleskinner Blues"—a song that is lyrically *about* male work and, as we've seen, put the Blue Grass Boys *to* work—was an especially clear testament to the genre's supposedly masculinizing effects. "That song was the real test," Peter Rowan (2024) related to me, and as a test, its value increases in direct proportion to the effort required for its execution. The more work you put into the song, that is, the more you demonstrate your bluegrass masculinity. And this is the crux of it all: "Muleskinner Blues" tests masculinity by staging an antagonistic struggle between musician and musical structure; that structure is controlled by (or, perhaps better, is) Monroe; and so, Monroe himself becomes the band's antagonist, one whose challenges must be overcome to prove oneself a real man.(23) This is why Monroe hazed his musicians—because "Muleskinner Blues" was, at bottom, a game of domination and subordination.

[6.6] How, exactly, does one win this game? How does one perform musical masculinity to Bill Monroe's satisfaction? And what is the relationship between that performance and the cognitive machinery explored throughout this article? The story of one Blue Grass Boy's musical initiation can help us explore these questions. When 24-year-old Mark Hembree joined the band as bassist in July 1979, he endured months of "intense hazing and baiting" (Hembree 2022a, xi), culminating in a tear-filled moment of crisis in late September that nearly made him quit the band.(24) Hembree was an outsider, an untested newcomer who had not yet earned Monroe's respect. And perhaps because of this, as Hembree related to me in a personal interview, Monroe would use "Muleskinner Blues" to push him to his limits. Hazing "was an honest dynamic of the song," he related. This was especially true of the third verse, where Monroe weaponized lyrics about quitting ("If you don't like your job, set your water bucket down") to exacerbate Hembree's insecurities:

> Well, he would taunt me with that line—"If you don't like your job. . . "—and then just like start fucking with me. Just out of the corner of his eye. You could tell it was there and the other [Blue Grass] Boys would laugh at it because he was trying to cross me up to see if I'd be able to follow him, you know? (Hembree 2022b)

Hembree could not recall a specific performance in which this musical hazing occurred, nor is it audible in any of the 17 performances in which Hembree appears in the corpus. But a performance from just before Hembree's tenure illustrates the kind of hazing he might be describing. **Examples 34** and **35** show the passage in question as performed on two consecutive days in September 1978 in Bean Blossom, Indiana. The first performance (Example 34) shows the passage in its normal execution, unfolding as a straightforward two-beat metrical unit that facilitates a smooth collective transition from C major to G major, anchored to the word "down." The second performance (Example 35) warps this span, twisting the melody into a shape that no longer provides a clear cueing signal. Particularly notable is the treatment of the harmony-anchoring word "down" and the preceding word "bucket." This gesture has been both stretched to twice its normal length and, more significantly, displaced a sixteenth note away from the tactus pulse, producing a stimulus that could suggest that the band is dragging behind. Kenny Baker (whose fiddle part is not transcribed) dutifully arrives at G major together with Monroe, but bassist Randy Davis doesn't

take the bait. He shrugs off Monroe's strange timing and plants the chord root a dotted eighth note later. There, he is rejoined by Monroe, who slides effortlessly back in sync by rocketing up to an accented G5. The oddly timed G4 thereby comes to have a dual interpretation, sounding like a shifted downbeat in the context of what came before and like an extended upbeat in the context of what follows. Monroe's vocal actions seem calculated to "cross up" his musicians by calling their basic time-keeping abilities into question, sacrificing performative tightness to sharpen the challenge of his signature crooked song.

[6.7] The controlled confidence with which Davis, then in his fourth year as a Blue Grass Boy, faces Monroe's rhythmic challenge came to Mark Hembree with time: "Later on, when I more got the hang of it, I'd just lock [Monroe] in to coming down. After a while when I didn't feel quite so defensive, I saw it that way: I'd think, 'Hey, wanna wrestle?'" (2022b). Here, we see that winning Monroe's game and earning his respect rested on fighting back, wrestling metrical control away from him, and locking his actions into a location of your choosing. "Monroe wanted a fight," Peter Rowan relates, "on a psychic level, he *wanted* you to stand up to him. And if you acted pacifistic, there was not anything that registered with him as 'good'" (2011, 1:37:04). It is this fight-oriented ethos that, at last, links the cognitive machinery explored in this article to Monroe's view that playing bluegrass produces masculinity. For the course of a Blue Grass Boy's musical education lies in developing a robust knowledge base that enabled a shift from reactive kinds of musical behavior—Travis Stewart hesitating to execute a G run (Example 33) or Doug Hutchins arriving late at a chord change (Example 32)—to proactive behaviors—Benny Williams leaping in early to cover up an absent G run (Example 20) or Lamar Grier using his statistical knowledge to confidently brandish a lead-in to a flexibly-timed chord change (Example 23). Through these analyses, we have seen that performing "Muleskinner Blues" entails commanding a robust set of expert knowledge that allows one to fight back against its crooked structure, thereby gaining the respect of the genre's founding father and graduating from Blue Grass Boy to bluegrass man.

[6.8] This knowledge and respect, however, came at a cost. Members of the Blue Grass Boys, many of them fresh out of high school, gave years of their lives to Monroe out of love for the music and respect for the man, only to wind up feeling exploited, burnt out, and exhausted. To be sure, Monroe never (to my knowledge) engaged in *Whiplash* (2014) levels of physical and emotional abuse. And yet Peter Rowan notes that his "subtle ways of putting you under his thumb" exacted an emotional toll, leaving the band perennially "hunched and dejected-looking" (2011, 1:35:40). This is a physical symptom of what Rowan calls "a classic Blue Grass Boy Syndrome," a kind of nervous exhaustion born from being perpetually "under the old man's eye." "There's sort of a wound," Rowan reflects, "the father wounds you so that you remember that wound and you have to fight back" (1:35:56). A full critical evaluation of this wound-based pedagogy is a task for another time.(25) What I want to emphasize here, however, is that Monroe's actions do more than bind musical knowledge to a toxic brand of aggressive and dominance-based masculinity. They also, as in so much male hazing, left Blue Grass Boys too exhausted to explore alternative ways of being, funneling their energies through narrow, Monroe-sanctioned channels and thereby blocking them from exploring their full humanity (Kivel 1999; Allan 2004).

Postlude: Toward a Structural Analysis of Ensemble Sociality

[7.1] There is much more that could be said about Monroe's "Muleskinner Blues." We have just seen how Monroe's musical practices worked to masculinize the bluegrass genre, for instance, but how "Blue Grass Girls" like Bessie Lee Mauldin and Sally Anne Forrester interacted with this structure remains to be explored.(26) Similarly, while the masculinity of bluegrass was explicit for Monroe, its whiteness was implicit but no less impactful, and the racial dynamics subtending Monroe's "Muleskinner Blues" were not central to this analysis. Monroe's mythological claim to be the genre's sole creator, after all, erases the contribution of all earlier voices—especially Black voices—to bluegrass, and "Muleskinner Blues" itself is a Black-originating number with an explicitly Black protagonist (marked by the racial slur "shine," a derivative of "shoeshine") that is recruited to construct white-centered pedagogical structures and histories for the genre.(27) Unpacking these racial dynamics would require its own lengthy study, one in the vein of Gopinath

and Shultz's (2016) work on "Kentucky" and in conversation with both Neal's (2009) historical survey of "Muleskinner Blues" as well as landmark studies on whiteness (James 2014; Doktor 2024; Froneman 2024) and Black appropriation in popular music (Morris 2019; Morrison 2019).

[7.2] With the preceding vignettes in hand, however, we can at least remark on the many ways that Monroe wraps himself into the sonic unfolding of "Muleskinner Blues," funneling the attention of his audience and band away from these racialized and gendered dynamics. For the audience, "Muleskinner Blues" is meant to be an awe-inspiring re-enactment of bluegrass's Big Bang, centering Monroe's voice as prime shaper of a crooked musical landscape. The song's Black origins are acknowledged but downplayed; the stage talk with which the present article began reduces Black influence to "a little blues" that Monroe himself chose to put into bluegrass; meanwhile, the melismatic treatment of the word "shine" seems to dampen its semantic content in performance. (28) Invisible too against the roar of Monroe's voice is the musical labor of the Blue Grass Boys, whose attention is likewise fixed firmly upon their bandleader. They, we have seen, are engaged in a game of domination and subordination with Monroe that unfolds through the cognitive medium of cue schemas. To lose this game is to pop out of invisibility by making an embarrassing mistake before a live audience. To win, on the other hand, is to stand up and fight back against Monroe's musical antagonisms, which, I have argued, entails developing advanced, song-specific knowledge that, by enabling proactive behaviors, allows musicians to exert pressure back onto the song's structure. In these ways, Monroe binds the erratic metrical storms of "Muleskinner Blues" to his own personal gospel of bluegrass, constructing through rhythmic magic an attentional ritual centered sonically, structurally, and socially on himself.

[7.3] By attending to the dynamics of interaction in this song, we have likewise seen how a structural analysis of ensemble performance is always already a social analysis. The article's six vignettes exposed an intertwined set of cognitive, social, and musical features powering performances of "Muleskinner Blues." Its *crookedness* was both a sonic link to country music history and a musical challenge to performers. Its ensemble arrangement entangled the song in *distributed cognition*, rendering its crooked structure into a site of active socio-musical coordination. That negotiation centered on constructing shared *common ground* using material from an individual's *knowledge base*. The shape of both common ground and knowledge base took place in the context of a band with an *unstable roster* that *lacked rehearsal*. This produced a common ground in which Monroe declared musical reality and musicians individually *fixed their metrical positions* to this reality, thereby funneling attention to Monroe and shutting off other avenues of interpersonal communication. That position fixing rested on *cue schemas* that captured generalized memories for how the song's requisite actions should be performed. And, lastly, acquiring these schemas allowed one to resist and eventually fight back against Monroe's *musical hazing*, which sprang from the view that bluegrass *produces masculinity* by developing toughness, dominance, and hard work.

[7.4] Each feature summarized above, and many more besides, is a cog in a complex social-musical machine, a cog that could be manipulated to vastly alter the social result. The cognitively informed analytical tools outlined here allow us to not only peer into this machinery, but also to imagine how it could be made to run amok. For the timing of "Muleskinner Blues" does not have to change verse to verse or performance to performance (but then, it wouldn't be crooked), and Monroe did not have to deny his band the opportunity to rehearse, nor did he have to haze his musicians (but then, he wouldn't be Bill Monroe). "Muleskinner Blues" could be different, but only if Monroe's own musical and social self was different. What might a "Muleskinner Blues" oriented toward kindness, generosity, communal support, and reparation sound like? This I leave for the reader to imagine. But in this particular configuration, "Muleskinner Blues" becomes an engine of distributed masculine cognition that Monroe uses to play his band in precisely the way that Jimmie Rodgers plays his guitar, warping their musical actions—and time itself—around his own paternal voice. It is, in every sense, a musical demonstration and affirmation of that title he cherished so dearly, "the father of bluegrass music."

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Footnotes

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1. On citybillies, young musicians driven to bluegrass by the ascendent folk revival and its recasting of bluegrass as folk music rather than commercial country music, see Rosenberg 2005, 166–230 and Nusbaum 1993. See also McDivitt 2021 for information about the Chautauqua Bluegrass Festival and its organizer Steve Lake, and Stuart 2011 for a biography of Godbey. Godbey is identified as the one who recorded the performance on a setlist housed on the audio streaming repository SugarMegs: https://web.archive.org/web/20130517192012/http://tela.sugarmegs.org/_asxtela/asxcards/BillMonroeAndTheBluegras 09-10FranklinOH.html.
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2. In describing this story as a myth, I mean to highlight that it is bound up within a broader network of cultural values and genre politics. As Neil Rosenberg (2005) and numerous others have documented, this is a story wielded to counteract the then-dominant association of bluegrass with the guitarist Lester Flatt and banjoist Earl Scruggs, two former members of Monroe’s band who achieved tremendous commercial success after breaking off as an independent duo. Famously, this was a source of intense bitterness not only for Monroe, who felt elbowed by his former bandmates into commercial marginalization, but also for a small but influential group of Monroe devotees like ethnomusicologist Ralph Rinzler and concert promoter Carlton Haney. In print and on stage, Monroe and his activist-managers sought to radically reframe bluegrass by enacting what Ron Roach (2014) has characterized as a “redemption drama,” performatively positioning Monroe as a

tragically maligned protagonist who deserved the respect, admiration, and devotion of all true lovers of bluegrass music. Flatt and Scruggs may be the best-known bluegrass band, the thesis of this drama went, but they are just copying Monroe, who is the real originator of this sound. His spoken introduction to "Muleskinner Blues" is clearly a core part of that drama: this is where he stakes his claim as the father of bluegrass music most directly and forcefully.
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3. No detailed study has yet been made of Monroe's rehearsal practices, but Rosenberg and Wolfe (2007, 197) quote several bandmembers in support of the claim that "there was virtually no rehearsal [before recording sessions], and Monroe seldom announced ahead of time what the group would record," a habit that "went back at least to the mid-1960s." The testimony is scarcer for rehearsal habits before live performances, but Blue Grass Boy Mark Hembree (2022a, 28) tellingly notes that "About the only time we ever rehearsed was backstage at the Opry." But even these rehearsals were sparse and enigmatic in their pedagogical content. Rosenberg and Wolfe (2007, 201–202) quote Bill Holden who complains that "If he wanted to teach you a new song, he would play it for you. He wouldn't even tell you, he'd just play it. He'd play something right before you'd be going on stage, but he would never sit down and say, 'Look, we're rehearsing this for an album.'"
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4. The word "timing" holds profound, yet malleable significance for Monroe and those who worked with him, standing in for a wide range of textural and rhythmic parameters. In a personal interview conducted in 2024, guitarist Peter Rowan located the special "timing" of "Muleskinner Blues" in the gestural rhythm of the guitar, which, he says, Monroe derived from characteristic boogie-woogie rhythms. More broadly, "timing" seems to stand in for every musical detail that distinguishes Monroe's proto-bluegrass arrangement of "Muleskinner Blues" from Jimmie Rodgers's.
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5. Perhaps for this reason, the locus of metrical flexibility in the North American popular music tradition is the solo singer-songwriter, balladeer, or blues singer (Murphy 2023). And although Joti Rockwell's (2011) seminal study of crooked tunes in old-time country and bluegrass music centers ensemble performances, he suggests that the demands of coordination require either that the crookedness is a fixed, "composed" structure that occurs the same way across different performances, or else that the ensemble is sufficiently close-knit to make close listening and adaptation possible.
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6. As Garrett Michaelson (2019) notes, divergence does not necessarily have to be understood as a problem at all; it can be an aesthetically valued interactive stance in its own right. I nevertheless believe that convergence was the default interactive stance for the Blue Grass Boys in particular, especially given Monroe's conservative musical tastes.
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7. Formally, Kaastra (2020, 105) defines the common ground as follows: "p is common ground for members of the ensemble if and only if 1. Every member of the ensemble has information that basis b holds; 2. b indicates to every member of the ensemble that every member of the ensemble has information that basis b holds; 3. b indicates to members of the ensemble that p." For a musician in the European art music tradition, common ground might include the score on which a performance is based, shared metaphors that establish meaning and shape interpretations, negotiated inflections of tempo, intonation, timbre, and dynamics, physical gestures that coordinate actions and communicate interpretations, and any other ways of establishing "a shared basis for participating and shared bases for identifying what information is relevant to their negotiation of music" (2020, 120).
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8. For a general study of mental models and prior knowledge in event cognition, see Radvansky and Zacks 2014, 124–27.

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9. In his pathbreaking study of the eighteenth-century galant style, Robert Gjerdingen uses the term *schema* for such "stock musical phrases" (2007, 9). To be sure, style-relevant actions in the action pool are schemas in exactly the sense Gjerdingen intends, and I avoid using the term here only to give emphasis to it later in the section on cue schemas. These types of actions are a central focus of bluegrass pedagogical texts—e.g., Carr's mandolin instruction book, featuring instruction in "common fiddle tune phrases" (2011, 14), "gospel turnarounds" (24), and "blues licks" (50)—and one iconic guitar action known as the "G-run" has been amply discussed by bluegrass scholars like Neil Rosenberg (2005, 69) and Joti Rockwell (2009, 151). Still, with the notable exception of Adler's (1974) study of "manual formulaic composition" in bluegrass banjo picking, there is a notable lack of scholarly inquiry into the style-wide action pool for bluegrass, but see Reck 1983, Smither 2019, and Tilley 2019 for comparable studies in, respectively, Karnāṭaka samgīta, jazz, and gamelan.
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10. The shift from verse to break at m. 59 of Example 11, for instance, does not involve a harmonic change, and hence it is not associated with an observable change of behavior for most of the musicians. Nevertheless, we can posit a collective conceptual shift at this moment: namely, the band shifts their focus away from Monroe's singing and onto Kenny Baker's fiddle line, which, as the break's primary melodic layer, will contain the essential triggers for the actions of the coming section.
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11. Bill Monroe, notably, does not play during this measure, and Joe Stuart's actions on bass are harmonically ambiguous: it's plausible to regard the G he plays on the downbeat as a continuation of subdominant harmony and the F-to-D action on beat 2 as suggesting a modally inflected dominant, or else to read the whole measure as an anticipation of the following measure's tonic chord.
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12. The perceptual literature on polychords isn't nearly as extensive as that on polymeter, though related studies on polytonality suggest that listeners struggle to disentangle simultaneously presented tonal frames (Krumhansl 1986). Nevertheless, my claim is not that it is *impossible* for individual performers to think of, much less perform polychords, but rather that it is *more* difficult for an individual performer to think polychordally than it is for two performs to think of separate chords. And thus, polychordal thinking is more likely to occur in distributed musical systems than it is in solo systems.
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13. The "Story of Bluegrass" was a cornerstone of Monroe ideology, an hours-long "redemption drama," in Ron Roach's (2014) characterization, where former Blue Grass Boys would assemble around and perform with their former bandleader, communicating that bluegrass music rests on an apostolic succession extending back to Monroe himself.
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14. In semiotic terms, what I call an "uninterpreted reality" is synonymous with what Nattiez (1990, 12 and 16) calls the "neutral level" or "trace," "an amorphous physical reality, until it is entrapped by analysis." The barlines that "entrap" Monroe's vocal trace on other staves represent an analysis of that trace for its metrical meaning, corresponding to Nattiez's "esthesic" semiotic dimension, or that dealing with the process of interpretation (1990, 12).
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15. "Free time," as used here, describes rhythmic structures characterized by abundant rubato and the absence of metering constructions (Hudson 2021; recall section 1.5), structures which therefore do not cue audiences to entrain to an explicitly articulated beat.
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16. Often, this scenario takes the shape of decoding an intention-laden message sent by one musician to another. As Brinner writes, "a cue is produced by one person to convey a message at a unique point in the course of a performance in order to request, suggest, or demand that other performers respond in some way" (1995, 183). The model advanced here, however, does not require that the cueing stimulus is intentionally produced for the express purpose of cueing, but instead positions the cue stimulus as an agent within the distributed cognitive system. Practically, this means that a musician could determine important information about an upcoming action from a musical stimulus that was not produced with the intention of providing said information.
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17. Due to its associations with Lester Flatt, it is sometimes called the "Lester Flatt G run," though Rosenberg (2005, 69) notes that it was not Flatt's invention.
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18. Following the first song in the set, Monroe remarks that "we were short a man this week, and [George] has been on the Grand Ole Opry all his life. [He's] played with a lot of different people down there and it's wonderful to have him in our company now."
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19. Note that this transcription follows Example 12 in largely withholding bar lines from Monroe's vocal part to capture its metrical indeterminacy; but, importantly, bar lines are used in this and in the following examples to mark off the clear two-beat metrical unit that frames Monroe's re-entry.
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20. As for Jim Moratto, who also changes chords in the later location, this is his only appearance in the corpus, making his understanding harder to reconstruct.
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21. Notably, the two outliers are the two performances from Grier's very first show as a Blue Grass Boy at the inaugural bluegrass festival hosted by Carlton Haney in Fincastle, VA in 1965. In the first of these performances (Fincastle, VA; September 1965 [a]), segment X lasts 12 beats and segment Y lasts 6, while in the second (Fincastle, VA; September 1965 [b]), segment X lasts 11 beats and segment Y lasts 5.
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22. There exist few explicit studies of musical hazing; the closest studies that address this are Alyssa Wells's (2022) ethnographic inquiry into the initiation rites of drum and bugle corps as well as William Cheng's (2018) rumination over the public shaming of musical celebrities.
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23. Wells (2022, 153) describes a similar sort of high-stakes, public heckling of rookies in the drum corps "basics block," which "presented them with a challenge they had to overcome, implying that successfully doing so would bring them one step closer to being considered an insider."
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24. The immediate trigger of this crisis, as Hembree relates in his memoire (2022a, 42–43), was financial: Monroe demanded that Hembree purchase a felt hat for an upcoming performance at the White House that Hembree could not afford on his meagre salary.
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25. For a compelling pedagogical discussion of trauma in music education, see the essays contained in Griffin and Niknafs 2023.
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26. For a history of women in bluegrass, see Henry 2013. Forrester never toured with Monroe and thus has no presence in the article's corpus. Mauldin did play bass on at least 10 of the performances in the corpus between 1957 and 1963. However, many of these recordings are rather poor in quality, a fact that, unfortunately, renders her actions in "Muleskinner Blues" largely

invisible.
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27. True, Monroe openly acknowledged his artistic debt to black musicians like Arnold Schultz, but, as Erika Brady notes (2013, 103), this was "a debt with boundaries: at no point did he attribute the paternity of bluegrass to [Schultz]—that was his own role, jealously guarded." Monroe likewise vocally supported and created opportunities for non-white musicians like DeFord Bailey (Morton and Wolfe 1991, 6 and 108) and the Japanese outfit Bluegrass 45 (Miller 2021), but the ranks of the Blue Grass Boys were never open to non-white musicians.
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28. Indeed, Mark Hembree (2022b) indicated that he always thought Monroe said "son" here.
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