

The 21st Century Guitar

Volume 1 *Proceedings of The 21st Century
Guitar Conference 2019 & 2021*

Article 8

5-8-2023

The Net of Jewels: An exploration and shape-based guitar pedagogy for songwriters

Mark Simos

Berklee College of Music (Boston), USA

Follow this and additional works at: <https://digitalcommons.du.edu/twentyfirst-century-guitar>



Part of the [Music Pedagogy Commons](#), and the [Other Music Commons](#)

Recommended Citation

Simos, M. (2023). The Net of Jewels: An exploration and shape-based guitar pedagogy for songwriters. In R. Torres, A. Brandon, & J. Noble (Eds.), *Proceedings of The 21st Century Guitar Conference 2019 & 2021* (pp. 79-127). <https://digitalcommons.du.edu/twentyfirst-century-guitar/vol1/iss1/8>

This Article is brought to you for free and open access by the 21st Century Guitar at Digital Commons @ DU. It has been accepted for inclusion in The 21st Century Guitar by an authorized editor of Digital Commons @ DU. For more information, please contact jennifer.cox@du.edu, dig-commons@du.edu.

The Net of Jewels: An exploration and shape-based guitar pedagogy for songwriters

Abstract

This article offers an informal, summary description of the Net of Jewels (NOJ) method, a guitar pedagogy specifically targeted to songwriters writing songs on guitar. The core of the NOJ approach is a progressive sequence of activities that incorporate shape-directed exploration of the guitar fingerboard as an integral aspect, supporting insights about harmony and theory, advancement of guitar skills and technique, and innovative creative work. The article outlines NOJ's core concepts and teaching principles, describes NOJ's pedagogical sequence of topics and supporting exercises and other activities, and provides background on the method's origin and evolution. This description reflects the author's perspective as the developer of NOJ, based on two decades of experience in teaching and refining the method, including the design of two levels of NOJ-based courses, incorporated into the songwriting curriculum at Berklee College of Music.

Keywords

guitar, guitar pedagogy, shape-based guitar pedagogy, songwriting, modality

Cover Page Footnote

Lecture given at The 21st Century Guitar Conference 2019.

The Net of Jewels: An exploration and shape-based guitar pedagogy for songwriters¹

Mark Simos

Berklee College of Music (Boston), USA

This article offers an informal, summary description of the Net of Jewels (NOJ) method, a guitar pedagogy specifically targeted to songwriters writing songs on guitar. The core of the NOJ approach is a progressive sequence of activities that incorporate shape-directed exploration of the guitar fingerboard as an integral aspect, supporting insights about harmony and theory, advancement of guitar skills and technique, and innovative creative work. The article outlines NOJ's core concepts and teaching principles, describes NOJ's pedagogical sequence of topics and supporting exercises and other activities, and provides background on the method's origin and evolution. This description reflects the author's perspective as the developer of NOJ, based on two decades of experience in teaching and refining the method, including the design of two levels of NOJ-based courses, incorporated into the songwriting curriculum at Berklee College of Music.

The Net of Jewels (NOJ) method is a guitar pedagogy that empowers developing songwriter/guitarists to incorporate shape-based exploration of the guitar fingerboard as an integral aspect of advancing their harmonic knowledge, technical development on the guitar, and creative processes of songwriting. The name *Net of Jewels*—a reference to the imagery of Indra's Net in Vedic spiritual philosophy—provides an evocative metaphor for a way of visualizing the guitar fingerboard central to the NOJ approach: as ensembles of small, interconnected chord shapes (the Jewels) that move, interlock, overlap, mirror, and transform or morph within an interwoven web of connections (the Net).

The author's background included extensive performing and recording experience as a guitar accompanist for traditional fiddle music, as well as intensive use of the guitar as a songwriter and composer². The author began incorporating and formalizing elements of his own intuitive approach to self-directed learning as a guitarist in teaching, initially at music camps, workshops, and in private and group lessons, and later as faculty at Berklee College of Music, a preeminent college for music, dance, and theater. The NOJ pedagogy has been incorporated into two semester courses offered within Berklee's songwriting curriculum; these courses are now taught by several other faculty beside the author.

Scope, perspective, and content of the article

Throughout the development and evolution of NOJ, the author has continued to document the method, in several forms, including a series of @50 hand-written notebooks, as well as numerous handouts and supporting materials, some of which were distilled into a @120-page workbook (Simos, 2012). To date, however, these materials have been made available only directly to students, or later to other Berklee faculty, as ancillary materials supporting direct teaching interactions or for purposes of teacher training. This article thus offers a first published description of the NOJ method. It is necessarily presented at an informal and summary level, and includes only selected excerpts from primary teaching materials.

¹ Lecture given at The 21st Century Guitar Conference 2019.

² A discography of the author's recordings as accompanist, songwriter, and tune composer, and of his songs and instrumentals recorded by other artists, can be found at his artist's website, www.devachan.com.

The article is addressed primarily to those interested in pedagogies for guitar and for songwriting: guitarists, composers and songwriters, as well as teachers and researchers in these and related fields. To make the material of most interest and use to these readers, the author presents NOJ from his perspective as the primary developer of the method. This includes many observations based on empirical teaching experience, as well as statements about intended learning outcomes and design rationale for various aspects of the method. Though not individually qualified as such, these statements will inevitably reflect embedded theories in use and working hypotheses which the author acknowledges are yet to be critically examined, or validated through evidence-based experiments or other research. They are best characterized, in aggregate, as a kind of informal autoethnographic report from a method developer and practicing teacher.

In addition, these statements are not intended as a chronological design *history* for the method. Many of these insights, or comparisons with other pedagogies, have been arrived at *a posteriori*, after developing primary materials, and emerging through teaching experience, explanations provided to and discussions with students, and in collaboration with other teachers. Nevertheless, they can serve as a reliable report of a coherent design rationale for NOJ in its current form, an understanding of which is essential to appraise the method: its scope (what it does and does not cover), emphases, components, and potential applicability.

The article's sections address the following topics:

- key features of NOJ, situating these in relation to other guitar pedagogies and related research;
- NOJ's core pedagogical sequence, as reflected in the syllabi of Berklee's NOJ-based courses;
- known issues and tensions in the method's design, and particularly of this pedagogical sequence;
- supplemental techniques used to augment each stage of the sequence;
- background on the origins and development context for NOJ; and
- possible directions for future work.

Essential features of NOJ

The subsections that follow describe specific essential aspects of the NOJ approach. These include:

- the central role of exploration and discovery;
- shape-based approach to chord formations;
- focus on small, triadic forms as a foundation;
- focus on the asymmetry of standard tuning (the Kink);
- diagrammatic notations and visualizations;
- imaginative transformation;
- the progressive topical sequence;
- an interwoven focus on modality within the sequence; and
- an integrated focus on technical and creative work.

As each of these aspects is discussed in the following subsections, it will be broadly situated in the context of other pedagogies and related research. These comparisons are based on review of original source material for varied pedagogical approaches, secondary materials such as academic studies of prominent players, and related research in psychology and cognitive science.

A large body of research, in multiple disciplines, has built on primary sources of guitarists' creative and pedagogical work:

- Historical research has helped to place the evolution of guitar methods, along with related instrumental traditions such as the banjo, in a broader cultural context (Cox, 1978; Meredith, 2003; Stenstadvold, 2006; Noonan, 2008).
- A number of graduate theses and dissertations have examined the work of seminal guitar players and pedagogical innovators, including Freddie Green (Dickert, 1994), Barney Kessel (Marquez, 2000), Johnny Smith (Warnock, 2008), Charlie Banacos (Kordis, 2012), Dennis Sandole (McGill, 2013), Ted Greene (McManus, 2015), and George van Eps (Swanson, 2017; Brennan, 2021), among others.
- Other academic researchers have used particular players' systems, or other research, as springboards for new pedagogical approaches, sometimes targeted to specific scopes of application such as college-level guitar programs (Balistreri, 1995; Elmer, 2009; McFadden 2010).

As NOJ was not developed as formal academic research including a prior survey of related work, the author was not familiar with many of these other approaches and sources as NOJ was developed. Accordingly, the comparisons offered here should not be interpreted as reports of the direct design rationale for NOJ, e.g., as responses to perceived lacunae in available methods. (A later section does describe some of the specific background of NOJ's origin and development, in part to provide context for suggested possible areas for further development.) The related work considered in most instances represents a selective rather than exhaustive survey, based on limited knowledge of the full extent of these other pedagogies.

Exploration and discovery in guitar pedagogy

NOJ's central, unifying aim is to cultivate the capacity to approach the guitar fingerboard³ as a domain of inquiry, through a sequence of activities for directed (and later self-directed) shape-based exploration and discovery. Though moments of discovery and sudden insights are always interwoven to some degree in activities such as learning and memorizing chords, practicing an exercise, or, for that matter, writing a song, the NOJ method focuses attention on exploration and discovery activities in their own right. These become a foundation for multiple learning and creative goals: advancing knowledge of, and curiosity about, theory and harmony; developing guitar performance skills and technique; and expanding the range and originality of source material available for the creative work of songwriting and composition.

This central aim motivates the scope of NOJ and provides rationale for each of the other key aspects described below. Though other factors have influenced NOJ's design, such as its stylistic origins or the environments where it has been taught, each aspect should be considered in the light of this central aim.

This exploratory approach of NOJ is very much in the spirit of a relatively new area of multidisciplinary research, as represented by the work of Jonathan de Souza (2017, 2018, 2021), which involves consideration of the guitar – particularly the structure of the guitar fingerboard – as a way of making *new* discoveries about theory, an embodied "instrument of music theory," referencing a concept from Rehding (2016). As De Souza (2021) writes:

What do you learn when you learn to play the guitar? Exercises and scales develop physical skills – for example, the ability to place fingers on the strings, to coordinate both hands, to play the right notes at the right time. Yet this practice is also a kind of ear training. With experience, the budding guitarist becomes aware of differences in chord quality, harmonic progression, meter, and texture. These musicianship skills ... are shaped by the possibilities and constraints of the guitar itself. Ultimately, you start to think like a guitarist. You start to conceptualize music – to know it, imagine

³ As discussed later in the paper, a shape-based approach can also be applied to right-hand techniques, extending the concept of shape to include temporally unfolding patterns of string soundings, by fingers or flatpick.

it, or experience it – in new ways. The guitar, then, is not just a tool for making sounds. As it coordinates body, ear, and mind, the instrument also becomes a tool for musical thinking. (p. 1)

Although this explicit conceptualization of the guitar as a kind of laboratory for musical thinking is relatively new, there is evidence that it has played a role in the history of the instrument. For example, Christensen (1992) has researched the guitar's role in fundamental shifts in chordal concepts in music theory during the Spanish Baroque period.

Although this view of the guitar has been articulated to date primarily by music theorists and researchers, it eloquently expresses the intent of NOJ: to create this sense of discovery and theory-making on the part of learners – especially *songwriters* – as they encounter musical concepts embodied in the shapes and symmetries of the guitar fingerboard. Although intermediate-level students learning via the NOJ pedagogy are not likely to stumble on fundamental new discoveries in music theory, they absolutely can have the *experience* of researching, and making discoveries for themselves, forming hypotheses for how chord shapes and resulting harmonic structures will change under certain operations, then investigating how those theories are either validated or contradicted by experiment and their sonic experience. This grounding in exploration and discovery also links advancement in guitar technique to the creative work of songwriting.

Shape-based approaches to the guitar fingerboard

A central aspect of the NOJ approach is drawing explicit attention to the *visual shapes* of chords, making observations about those shapes part of the exploration and discovery process. To characterize what is meant by *shape* in the NOJ context, consider a diagram depicting a portion of the guitar fingerboard, with notes of a chord indicated as dots. To consider the chord in terms of shape, the dots are connected (visually, or imaginatively) by lines; the visual pattern created by those lines outlines the *shape* of the chord.

Closely aligned with this emphasis on shapes, NOJ encourages dual ways of approaching chords. Some activities focus on chord shapes with explicit reference to the harmonic structures they realize at particular fingerboard positions. Other activities involve direct operations on chords in terms of shape characteristics, and encourage experiential responses to resulting sonorities, without assuming prior knowledge of their harmonic qualities, or requiring harmonic analysis or interpretation before using shapes in a musical or songwriting context. The focus on shapes also supports exploration and discovery through inviting observations: e.g., that the same shape may produce different chord qualities; and conversely, that different shapes may produce chords of the same quality, in different locations.

To compare the role of shape-based exploration in NOJ to other pedagogical approaches, it is helpful to distinguish a focus on shapes of individual chords, considered as separate units, from more generalized visual approaches to the fingerboard. Furthermore, an emphasis on visual or shape-based patterns is not always correlated with a focus on triadic structures (discussed below).

Both shape-based and more general visual approaches have long been part of guitar pedagogy. This may well reflect the derivation of these pedagogies as formalizations of the intuitive approaches of the players who have developed the methods. Interview-based and other qualitative research (for example, McLaughlin, 1982; Scott, 2003; Solstad 2015) has documented that many master players visualize the guitar fingerboard in terms of visual networks or patterns across the grid formed by strings and frets respectively.

Use of diagrammatic notations is one indication of a given method's emphasis on shape-based principles. An early, influential work of this kind was *Eddie Lang's Fingerboard Harmony for Guitar* (Lang & Berend, 1936). The book advocated use of alternative notations to accommodate different learning styles, offering

a forceful justification for use of diagrams in particular.⁴ Although the author was not aware of this book when developing NOJ, NOJ has striking commonalities with the book's presentation of triads on stringsets, exercises exploring voice-led shape relationships, etc. One significant difference emerges in the approaches of the respective methods to fingering strategies, due to issues discussed more fully later in this article.

Later shape-based approaches include Howard Roberts' system based on "sonic shapes" (Roberts & Hagberg, 1989), and Pat Martino's system, based around symmetries of augmented and diminished chord structures (Capuzzo, 2006). More recently, Miles Okazaki's (2014) *Fundamentals of Guitar* offers a trove of alternative visual network representations for exploring the guitar fingerboard.

Some approaches (for example, Rodgers, 2017) refer to shape-based patterns as "grips," emphasizing their use in quickly enabling students to play repertoire, or for melodic soloing in particular styles and genres. Such approaches can tend toward *ad hoc* presentations of riffs and licks, rather than systematic visualization of the fingerboard, and may not establish strong connections to underlying harmonic underpinnings. (As described further below, NOJ's focus on triads helps to counteract this risk, by linking each shape to specific harmonic structures.)

One shape-based approach, the CAGED system, is particularly well-known, especially in varied acoustic styles and genres other than jazz. As such, it was often the best-known method in teaching settings such as music camps where the author also taught NOJ. Comparison of NOJ to CAGED is therefore of particular interest. However, CAGED is not a unified pedagogical system, but rather a now-ubiquitous approach, referenced, used, and interpreted in diverse ways by many teachers and authors.

In fact, the system's origins are not definitively documented. The earliest published reference appears to be a 1975 *Guitar Player* article detailing a "remarkable series of four eight-week sessions collectively known as 'The Fingerboard Revealed,' developed by [guitar instructor] Keith Allen to 'illuminate the dark, mysterious world of the guitar fingerboard'" (Sievert, 1975, p. 26).⁵ It is possible that Allen organized these materials relying to some degree on earlier systems, such as Howard Roberts' "five fingerings" diagrams⁶. Allen also created a visual poster summarizing the system⁷. In any case, the CAGED scheme spread widely among guitar teachers in multiple genres.

This diversity of interpretations makes it difficult to assess CAGED as an overall pedagogy, for direct comparison to NOJ's specific pedagogical sequence. Some contrasts can usefully be drawn between the fingerboard shape architecture of the respective systems.

The CAGED scheme organizes the guitar fingerboard into five distinct, interlocking regions. This scheme emphasizes lateral connections of shapes across strings of the fingerboard, supporting efficient fingerings for scale, chord arpeggio, and pentatonic patterns. Notably, though the five-region scheme does seamlessly pattern the entire fingerboard, it does not specifically, or visually, isolate three-note triad forms on different inversions and stringsets. This is a key difference in the two approaches.

⁴ As described in Danner (2021), a recently discovered earlier guitar method from 1838 also utilized a diagram-based approach, organizing the fingerboard into positions and regions.

⁵ The sessions were developed for the Blue Bear Waltzes School of Genuine Music, a San Francisco non-profit community music school, now known as the Blue Bear School of Music.

⁶ As quoted by Jackson Allen, Keith Allen's son, personal email communication, June 8, 2022.

⁷ Still available, for example at <https://www.themusicstand.com/The-Guitar-Laminated-Poster-p/557051.htm>

Significantly, the name of the scheme, CAGED, is an acronym of first-position chord shapes (C, A, G, E, D) inscribed in each respective region. (This association of regions with familiar, or so-called *campfire* chords, as reinforced by the mnemonic, may in fact have helped to popularize the system.) The five regions are, effectively, barred versions of these five chord shapes. But this reliance on familiar shapes results in some inconsistencies in the patterns. For example, two of the chord shapes (G and C) are on *non-contiguous* stringsets and include octave-doubled tones. As visual patterns, then, they do not translate easily to clear harmonic roles for each note in the shape.

In contrast, NOJ builds its visual network on what are termed the *Jewels*: three-note shapes on contiguous stringsets (that is, closed-voiced inversions), with no octave-doubled notes. Rather than dividing the entire fingerboard into five regions, jewel shapes are associated with their respective stringsets; rather than requiring five regions, the three respective inversions for each shape create moveable patterns along each stringset. The full rationale for this shape orientation will become clearer in considering the focus on triadic forms, attention to the intervallic asymmetries of standard tuning, and NOJ's transformational approach.

The guitar fingerboard can, of course, be conceived in terms of and described via many different visual schemes. In comparing the approaches of different pedagogies, it is useful to consider the musical skills and activities a given pedagogy is intended to support. For example, many visually-based pedagogies are designed to aid in melodic soloing, using scales, arpeggios, and pentatonics; others support chordal vamping in styles that preference full (six-string) voicings, or advanced techniques such as chord melody.

NOJ is intended, in contrast, to support the activity of writing songs on guitar. NOJ emphasizes small, individual shapes linked into voice-led progressions, localized in particular fingerboard regions, and utilizing accompanying open strings rather than full, closed six-string chords (in particular, avoiding barre chords).

A more general point of contrast is that NOJ recruits attention to shapes as a way of encouraging *exploration* of the fingerboard. Although the triadic structures that are NOJ's initial focus can be woven together into a single presentation of a network covering the entire fingerboard, NOJ builds awareness of this network progressively through a pedagogical sequence that starts with individual shapes, which students gradually learn to connect in various ways, like puzzle pieces. As shapes are seen to interlock – first along stringsets, then across stringsets – the fingerboard space as a whole *becomes* patterned for the player. This approach is consistent with NOJ's central aim: to encourage an exploratory, discovery-based approach to the guitar.

Focus on triadic structures

Building on the shape-based approach, another distinctive aspect of NOJ is its focus on triadic structures, not just initially but for a considerable portion of the pedagogical sequence. Here we first offer some rationale for this focus, then briefly compare NOJ's approach to the triadic emphasis of other pedagogies.

One reason for NOJ's focus on triadic forms is stylistic and genre based. Though many guitar pedagogies emphasize triadic forms, pedagogies oriented toward jazz often treat triads as foundational material, since direct use of triadic voicings is idiomatically inappropriate in many contexts such as chordal vamping. Triadic material may be presented very concisely, as preparation for rapidly moving on to fuller chord voicings. These methods also often focus on facilitating scalar and pentatonic single-note melodic patterns, supporting melodic soloing and improvisation. Method authors such as Van Eps (1980, 1981, 1982) who went deeply into voice-led triadic progressions were supporting a complex, solo-guitar performance context.

In contrast, NOJ evolved initially in teaching guitar accompaniment for traditional dance music, in Celtic and related styles. These styles of guitar accompaniment are primarily diatonic and modal and make extensive

use of triads moving in voice-led progressions. Later, adapting NOJ for a target audience of contemporary guitarist-songwriters, this focus on diatonic (and modal) progressions proved still stylistically appropriate.

Close-voiced triads are also relatively easy to play, for the intermediate-level players who have been to date the primary target student population for NOJ. The chords do not involve large stretches, with a few exceptions (e.g., the root-position major chord on stringsets {5 4 3} and {6 5 4}, dubbed the "chord of woe" by some students struggling to recruit recalcitrant little fingers in playing chords). Each triad shape also offers well-scoped technical problems for finding efficient left-hand fingering patterns, and right-hand finger- or flatpicking patterns that sound only certain fretted or supporting open strings. This encourages development of clean technique.

It is true that individual triad shapes do not easily support full six-string strums, as do barre chords. Yet the very utility of barre chords also tends to make players over-reliant on them; songwriters often find their predictable sonic qualities uninspiring and seek fresher sonorities. Working with triads, in association with open strings used as tonic drones or coloristic added tones, encourages very different styles of chordal writing on guitar. Triads provide an open-ended, relatively non-style-specific foundation, encouraging songwriters to experiment, explore, and creatively respond to the experiential and evocative effects of varied triad inversions and voicings, even on ostensibly equivalent harmonic progressions.

Beyond stylistic and pragmatic factors, working with triadic forms can be integral to encouraging exploration and discovery on the guitar. Since each shape contains all three notes of a given triad (without unisons or octave doublings), the shapes and their relationships correlate to harmonic principles: visual symmetries lead directly to insights about theory. And, as small, contiguous units forming distinctive shapes on the fingerboard, triads provide intuitive starting points for learning visual transformations that can be meaningfully correlated with musical relationships.

With this rationale in mind, some comparisons with other approaches can be offered. As discussed above, not all guitar methods emphasizing visual, shape-based approaches to the fingerboard specifically emphasize triadic forms. Conversely, not all methods that emphasize triadic forms necessarily utilize a shape-based approach, or diagrammatic notation.

Many guitar pedagogies briefly introduce triads, then quickly move on to four-note chords such as sevenths. In contrast, George van Eps (1980, 1981, 1982) pioneered a rigorous, comprehensive approach to the guitar fingerboard, supporting an intricate, voice-led style of solo guitar playing, with an intensive focus on triads and related three-note structures, explored via an exhaustive repertoire of diatonic chord scale exercises. Brennan (2021) provides a detailed lineage of the influence of van Eps (both direct and indirect) on many other teachers and pedagogical innovators, including Ted Greene (1971), and William Leavitt (1986a, 1986b, 1987), a central figure in the development of Berklee's guitar curriculum. The Van Eps materials, primarily utilizing staff notation, do not draw specific attention to shape-based aspects. (Also, as discussed later, suggested fingerings for these exercises are definitely not oriented toward intermediate players.)

Mick Goodrick, in his influential *The Advancing Guitarist* (1987), introduces, in five dense pages (p. 39-43), the four triad types (major, minor, diminished, augmented), in both close- and open-voiced inversions. He then gives the following instructions, which could be said to encompass much of what NOJ introduces in multiple, iterative steps spread through a topical sequence that extends over two semester classes:

Now, go ahead and learn all C major, C minor, C augmented, and C diminished triads, all inversions, all registers, all locations, in closed as well as spread voicings... (p. 40)

To be clear, the choice of notation used in published materials is not definitive evidence for or against the role shape-based insights may have played in a method developer's own technical development, or in their direct teaching. But the presentation of triadic structures, and the pace of that presentation, is very different in these methods compared to NOJ, consistent with differences in the audiences addressed and the intended musical applications.

The intervallic asymmetry of standard tuning: the Kink

The intervallic organization of the guitar fingerboard presents well-known issues, dealt with in ways by different guitar pedagogies. One such issue is the problem presented by multiple locations for the same pitches on the guitar fingerboard, in contrast to the piano keyboard. Another problem initially presents as specific to standard tuning on the guitar, EADGBE⁸: the intervallic asymmetry of the tuning, that is, the anomalous major third interval between the G and B strings.

NOJ's shape-based approach and focus on small triadic jewels allows this intervallic discrepancy to become a central teaching point of focus. In NOJ it is referred to as the *Kink*, in part as an acknowledgement that players initially encounter the anomaly as an annoyance, obstacle, or source of confusion. This NOJ-specific term is used (for convenience) in discussing other approaches, before describing its central role in NOJ.

Even when not explicitly emphasized, players are well acquainted with the implications of the Kink, for chord shapes, fingerings, scales, etc. These implications are not always characterized as problematic. George van Eps, as noted above, presented his triad-based exercises without diagrams; yet he clearly appreciated the Kink's significance, as evidenced by this comment from an interview with Ted Greene (Greene, 1981):

Ted Greene: Why did you decide to extend the low end of the instrument, to add the seventh string?
GVE: I wanted to get down where my brother was playing [on piano]; I wanted a little more range. But I didn't want to change the wonderful Spanish guitar tuning. You know, it evolved — it wasn't thought out by one person. Every morning I do a bow to the east and thank God for whoever's mind decided to put the third in the tuning. (p. 82)

Some systems, such as the CAGED scheme described above, essentially compile in the Kink in providing a comprehensive map of chords on the fingerboard; students learn to navigate by learning and memorizing the pattern of chord shapes as given, without attention necessarily being drawn to the anomalous interval. Other approaches (for example, Matone, 2005) do explicitly emphasize the asymmetry. Berklee guitar faculty Jon Finn, in *Advanced Modern Rock Guitar Improvisation* (1999), makes negotiation of the discrepancy a central principle, giving the anomaly the evocative sci-fi term "warp refraction threshold" (p. 10-15). Finn's approach was recently revisited in an article by Chris Buono (2022).

Often discussions of the Kink focus on issues and affordances it presents for scales and melodic soloing. For example, Ted Greene, in *Modern Chord Progressions* (1977), introduces a principle he terms "string transference" (p. 18), as a way to shift chords to different stringsets to obtain longer chord-scale sequences. Greene's instructions are to move (i.e., transfer) the shape to the new stringset, change the shape as needed, then *shift* the chord up or down (five or seven frets respectively) to obtain the same chord (that is, the same chord quality on the same root) as the chord being transferred. Underlining this usage, he states that the principle "can be helpful in situations where you start to 'run out of room.'" (p. 19)

This exposition provides a clarifying contrast to NOJ's presentation and pedagogical use of the Kink. The Kink is introduced at the start of the NOJ pedagogical sequence: navigating the Kink becomes a first

⁸ All tunings in this article will be listed low string to high.

experience for cultivating a capacity for imaginative transformation of chord shapes. Rather than a way to find the *same* chord in different places on the fingerboard, the rule is presented first as a way of relating triad shapes of the same inversion on *different* stringsets: by seeing the shapes as transformations.

At the outset, students are prompted to observe how close-voiced chord shapes must change when moved across the Kink, in order to preserve their chord quality: i.e., *the note that moves across the Kink must be raised by one fret*. This simple rule is demonstrated first with the familiar campfire chords E, A, and D, as illustrated in Figure 1. Students frequently remark that, though they have played these chords many times, they had not previously seen the different chord shapes as a single shape morphing across the Kink. This transformation rule is named the *Golden Rule of the Kink*, in part to emphasize that it applies to all shapes moving across the Kink (e.g., the four-note seventh chords familiar to more proficient players).

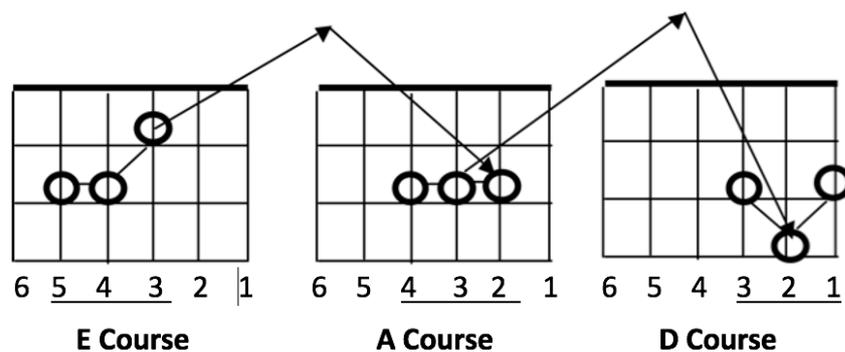


Figure 1 Illustrating the Golden Rule of the Kink with second-inversion campfire chords

It may be useful to compare this to another strategy for resolving the problematics of the Kink: by eliminating it, via a rationalized tuning of fourths – EADGCF. With uniform intervals between all string pairs, this tuning eliminates the discrepancy, reducing the number of chord shapes to learn. The all-fourths tuning has been adopted by several players and educators, especially in jazz and fusion genres, such as Stanley Jordan, Allen Holdsworth, Tom Quayle, and Ant Law (Law, 2015).⁹

This tuning strategy runs counter to the NOJ approach, both practically and pedagogically. In practical terms, all-fourths tuning eliminates many of the open-string affordances that NOJ employs in combination with triads. Philosophically, NOJ specifically embraces the Kink as a locus for inquiry, a useful disruption as it were: the upper stringsets become an experiential laboratory for learning about interdependencies of harmonic structure, tunings, intervallic patterns of stringsets, and resulting chord shapes and fingerings. By doing the cognitive work of predicting *how* chord shapes change to accommodate the Kink helps, students learn to integrate visual, procedural, tactile, and auditory information.

However, when first introducing the Kink to students, the all-fourths tuning is often shown for its explanatory value: it dramatically demonstrates the shape-bending effects of the Kink – by temporarily removing it. A complementary, similarly compelling demonstration is to tune the fourth string from G to F#, yielding the tuning EADF#BE, associated with early lute repertoire. This moves the Kink to stringset {4 3}, rotating

⁹ The author first learned of this tuning system in his early teenage years, from a visit to his summer camp by former Kingston Trio member Dave Guard, who independently developed a method based on the tuning (Guard, 1968). The thought-provoking nature of this encounter was likely one of the seeds that led to the author's later development of the NOJ method.

placement of the triad shapes on stringsets. A primary learning value is the surprise of seeing shapes associated with the {5 4 3} (campfire E) stringset reappear on stringset {3 2 1}. These demonstrations help students conceive of shapes in a rotational way, with each triad inversion yielding three distinct shapes as it moves across the Kink.¹⁰

Diagrammatic notation

Visualization strategies play a prominent role in guitar playing, and in teaching both performance techniques and music theory. A number of research studies in psychology, cognitive neuroscience and related fields have addressed cognitive and sensory-motor aspects of guitar performance and supporting notational strategies. These studies span a variety of musical genres, and address a number of usage scenarios, from sight-reading to improvisation (Bailey & Driver, 1992; Crump et al., 2012; Phillips, et al., 2019). In an excellent summary of this interdisciplinary body of research, Brandon (2019) and Brandon and Westwood (2019) point out the continuing challenges of assessing the efficacy of varying notations, including staff notation, guitar tablature, diagrammatic, and lexical representations.

Choices of notation are thus critical to guitar pedagogies, especially those emphasizing visual patterns on the guitar fingerboard. Due to NOJ's focus on shapes, small triadic forms, and transformations, use of chord diagrams as primary notations, in preference to either staff notation or guitar tablature, is an integral aspect of the method. One key notational element is explicit diagrammatic support for visualizing chords as shapes. Other NOJ notational conventions will be described in subsequent sections.

Understanding Kink effects provides a general principle that recurs as an explanatory and visual reference and helps foster a transformational understanding of the relationships between chord shapes. The first, immediate application is in learning the three inversion shapes for major triads on the three different stringsets, as shown in the chart of Figure 2. This chart is laid out specifically to facilitate visual recognition of the Golden Rule of the Kink. Each inversion shape can be seen as transforming into three related shapes as it moves (note that this language itself is somewhat metaphorical) across the three *Kink-distinct* stringsets: {5 4 3}, {4 3 2}, and {3 2 1}.

Comparison of this chart layout with another pedagogical source – Ted Greene's exposition of basic triads in his classic *Chord Chemistry* (1971)¹¹ – concisely illustrates some points of commonality and contrast, if through seemingly small details of visual representation.

Although Greene's books make extensive use of diagrams showing dots for fretted notes, these diagrams rarely show *connections between dots*. In contrast, the connecting lines (referred to as *guy-wires*) are essential to the NOJ visual representation. While dots arguably correlate to physical gestures (where fingers are placed at string and fret positions), lines connecting dots do not.¹² Rather, guy-wires in NOJ chord diagrams are notational commitments to a visual – specifically a shape – *interpretation* of the chord.¹³

¹⁰ This rotational view can be understood in terms of the fretboard transformations discussed by de Souza (2018, 2021).

¹¹ Notably, Greene presents the triads only in Chapter 15, as a kind of special-effect stylistic texture, useful for musical applications such as "harmonizing simple tunes like Christmas carols." (p. 83)

¹² They are not, for example, stylized graphic representations of a player's physical hand, connecting the fingers playing the chord. This is a point of distinction with approaches such as, for example, Koozin's (2011) specific notational innovations, intended to capture information about hand and finger relationships to fretted notes of chords on the fingerboard.

¹³ Alternate connecting schemes, and thus interpretations, are possible. In NOJ diagrams, guy-wires typically connect only notes on adjacent strings, or where there are no fretted notes on intervening strings.

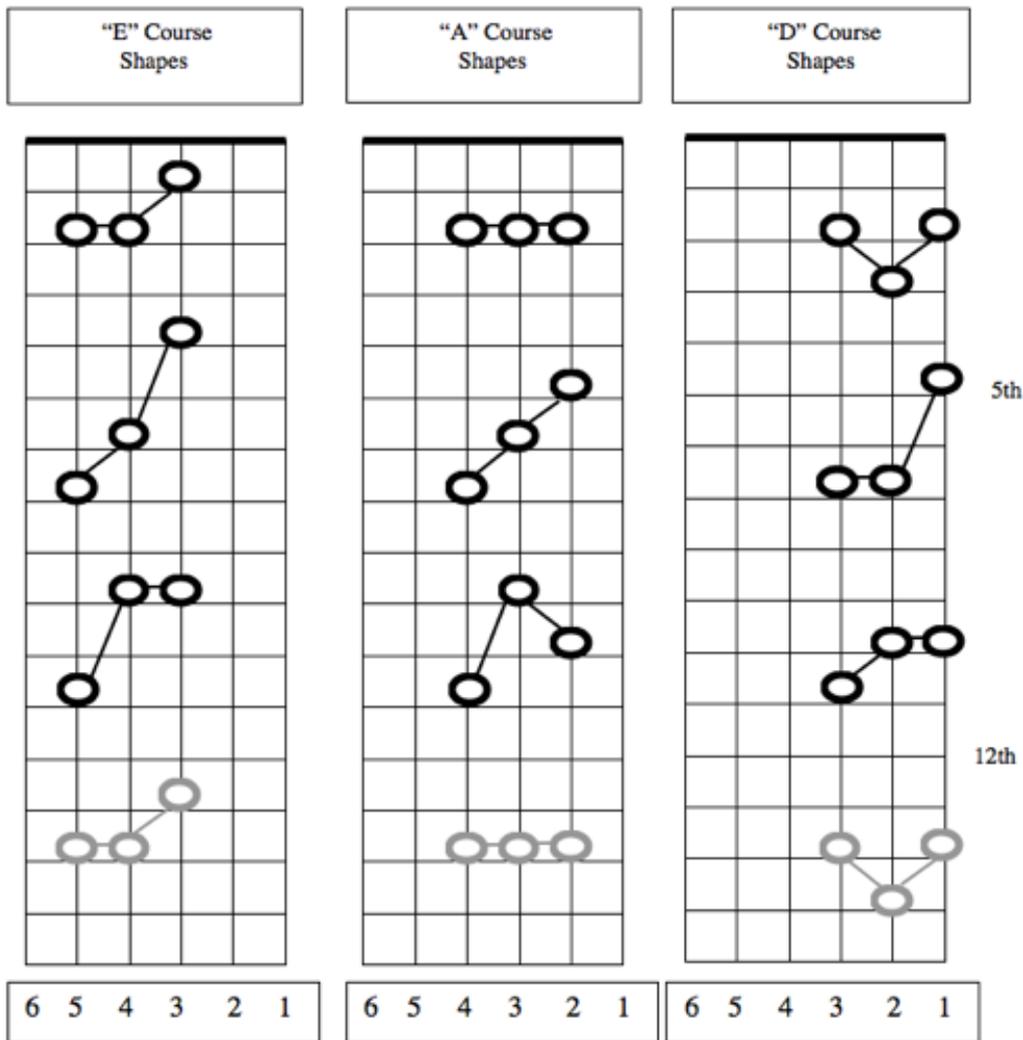


Figure 2 The three close-voiced major triad inversions on the three Kink-distinct stringsets.

To illustrate the shapes, Greene presents all triads in the same key, F (major and minor), allowing the first-inversion shape on stringset {3 2 1} to be shown in closed position (without open strings). The order of presentation for inversions on each successive stringset rotates, consistent with the crisscrossing arpeggiation pattern connecting shapes (e.g., first inversion on {3 2 1}, to root position on {4 3 2}, to second inversion on {5 4 3}, etc.).

In the NOJ diagram of Figure 2, the nine major triad shapes are laid out very differently. To aid players in connecting the inversions to familiar material, the diagram shows campfire chords for E, A, and D major in their first-position locations, with chords on each stringset on the root of the campfire chord associated with that stringset.¹⁴ This layout gives *initial* preference to shape relationships moving laterally across stringsets: yielding chords with roots a fourth above or below the starting chord, and maintaining chord quality by applying the transformation rule – the Golden Rule of the Kink. These lateral moves facilitate simple diatonic

¹⁴ Early versions of NOJ even referred to "E," "A," and "D" stringsets; later, more formal stringset nomenclature was adopted.

progressions where chords move by a fourth (up or down) – without jumping up or down the neck. These key choices also invite use of the open strings (E, A, and D respectively) below each triad.

Since the first-position triads in this scheme are second-inversion triads, the diagram shows inversions up the neck on a large cross-section of the fingerboard, in the order: second inversion/root position/first inversion; second-inversion shapes are repeated twelve frets above the starting position to emphasize the cyclical nature of the inversions. This layout helps students visualize spatial relationships and distances between inversion shapes: later, this negative space will be filled by voice-led progressions such as I-IV-V-I, using interstitial triads in other inversions.

Imaginative transformation: Shape shifting and shape sharing

The focus on shapes, particularly close-voiced triad shapes, supported by notational aids, provide a foundation for an essential principle in NOJ: encouraging students to visualize shapes as, metaphorically speaking, *moving*, *overlapping*, and *changing shape (morphing)* in different ways on the fingerboard.¹⁵

As a way of cultivating these skills of imaginative transformation, NOJ is, in effect, an attempt to support with a formalized pedagogy an intuitive *shape sense* shared by many skilled guitarists, across diverse styles and genres, particularly players who employ a variety of alternate tunings. This shape sense allows players to rapidly and fluidly map between desired chordal qualities and the intervallic landscape of a given stringset, or an entire tuning. (A similar skill is employed by players of other stringed instruments such as banjo or fiddle, which also use alternate tunings.) Thus, although NOJ begins with minute attention to the Kink – a seeming specific feature of standard tuning – the ultimate goal is far from limited to that tuning system.

This aspect of the NOJ approach resonates strongly with recent work – for example, by de Souza (2018, 2021), as referenced earlier – that considers the guitar fingerboard as a music-theoretic transformational system. It also owes a philosophical debt to what has been called a *Goethean* approach in the Waldorf education movement (Seamon & Zajonc, 1998). Goethe combined an artist's sensitivity with a scientist's (more specifically a natural scientist's) objective curiosity and methodical powers of observation. For example, in his work on plants, Goethe cultivated a way of studying and visualizing the overall form of a plant as a series of metamorphoses: seed into stem, into leaf, into flower. Viewed in this way, the plant can be understood as making the same "gesture" in different aspects of its form. In a similar spirit, in NOJ students are invited to visualize chord shapes changing or morphing as they move across the fingerboard along various axes.

Distinct kinds of shape transformations are explored in NOJ. The Golden Rule of the Kink exemplifies a principle that can be called *shape shifting*, where a shape changes in defined ways to correlate with a change in chord quality. The shape change can occur in moving a chord across stringsets, in order to *preserve* the chord quality. It can also be observed in changing a shape *in place* (or at least, staying on the same stringset). For example, transitions between major and minor triads can be visualized as shape transformations, by changing one voice of the triad.

These views can be combined: for example, certain shape transformations (in place) of a major to a minor triad (specifically, parallel and median relationships involving a half-step shift) can also be effected in certain configurations by moving the shape across the Kink – *without* changing shape. Thus, a complementary visual/conceptual aspect is engaged, *shape sharing*: recognizing when (and why) the *same* shapes

¹⁵ To be clear, these movement pathways express canonic musical relationships; they are not progressions for a specific song, though songs are of course built from various traversals of these pathways.

reappear in different stringset (and later, tuning) contexts, with *differing* harmonic qualities. These shape-shifting and shape-sharing insights, first explored in standard tuning, provide a springboard for later exploration of alternate tunings, voicings, and modal progressions. For example, the popular semi-open tuning DADGAD (discussed later in this article) leaves stringset {5 4 3} unchanged from standard tuning: thus shapes on that stringset all transfer to DADGAD, facilitating playing in D, however, rather than E, in combination with open strings (lower D, upper A and D).

The NOJ pedagogical sequence: directed exploration and discovery

Supporting an overall emphasis on discovery and exploration, and building on a shape-based and transformational approach, the structural core of the NOJ method is a fine-grained sequencing of topics that presents each new set of chordal resources as transformations of prior material. The sequence directs students through a progression of exploratory experiences, engendering new discoveries and material for creative work at each step. A later section of this article traces through this sequence in detail, as currently implemented in the Berklee teaching context.

The NOJ pedagogical sequence works through a comprehensive study of diatonic three-note chord shapes, beginning with close-voiced major and minor triads in all inversions, on adjacent-string stringsets, connected via voice-led progressions. By combining attention to harmonic structures with a transformational visualization of chord shapes derived from and shifted by string interval relationships, students learn a rich palette of shape configurations and connections. This progressive presentation sequence also empowers students to first re-enact, then make their own, shape-based discoveries of new chords, inversions and voicings, progressions, and eventually tunings.

The NOJ approach is particularly oriented toward songwriters and songwriting. At each stage of the sequence, students practice experiential listening by sound, temporarily bypassing or quieting harmonic or analytical interpretation, and reflect on these experiential responses including emotional, narrative, figurative, lyrical and thematic associations. These lead in turn to creative responses, including vocal melodies written in response to guitar textures. As the sequence progresses to richer chordal resources, students engage creatively with those resources through constrained songwriting exercises, which build from small etudes to complete songs – creative work interwoven with directed exploration of the guitar’s resources.

The close encounter with the Kink described above is the starting point for the NOJ sequence, which progressively explores shapes, shape relationships, and voice-led progressions. Students explore how shapes fit together like jigsaw puzzle pieces, each shape surrounded by an emergent web of interlocking visual associations, connections, analogies and transformations (the Net). Visually and technically, this sequence moves through a progression:

- from individual shapes (jewels),
- to linkages of shapes through common-tone relationships (*neighbor pairs*),
- to localized *constellations* connecting pairs into fuller palettes of chords, visited in specific sequences and progressions,
- to *fields*¹⁶: related patterns of chord shapes along stringsets (e.g., triad harmonization of the major scale; as well as other structures, pushed through other diatonic scales).

¹⁶ Thanks to Bonnie Hayes for use of this term to convey a patterned region of chordal resources. Although her original reference was to chords emerging from scalar materials on the piano keyboard, the imagery also applies well to the guitar, particularly to patterns of chords moving by stepwise voice leading along the full extent of the fingerboard.

Fields can be further abstracted: for example, by rotation to obtain different modal versions, or transferred to stringsets with other intervallic relationships, and, by implication, to alternate tunings.

It is difficult to compare the NOJ sequence in detail to other guitar pedagogies, as many of these are presented in a much more exhaustive, even encyclopedic way. Authors such as van Eps (1980, 1981, 1982) or Goodrick (2001, 2002, 2008) often allude to the, undeniably, almost limitless possibilities of the materials they present. Sometimes students are advised to proceed in a careful sequential way; sometimes they are encouraged to jump in where they can and find a starting point that interests them. Of course, these resources serve different needs, and address very different target audiences of readers and guitar players. At this point, it may suffice to stress that the intent of providing a detailed, specific sequencing of topics in NOJ is not to discourage, but rather, to foster the student's spirit of exploration and ability to respond creatively to the materials.

Modality

An important musical principle recurring throughout the NOJ sequence involves modal¹⁷ sequences and progressions. While the scope of NOJ is largely confined to diatonic progressions, including modal versions of progressions opens up many more possibilities, especially for songwriters. The emphasis on modes likely reflects, at least in part, NOJ's stylistic origins in modally-based traditional folk music (as described later in this article). However, a modal framework also turns out to be germane to many genres of contemporary popular music, including both songs built on acoustic guitar arrangements and more production-heavy songs based on loop-based diatonic chord structures. It is empowering, and creatively challenging, for student songwriters to be able to use simple diatonic triads in modal combinations, creating progressions with strikingly different thematic and emotional associations.

Beyond stylistic considerations, interweaving modal with functional-harmonic progressions reinforces NOJ's overall pedagogical goals of fostering exploration and transformational thinking. In pedagogies targeted to the stylistic needs of jazz (for example, Miller, 1996, 1997), modality might be introduced only briefly in terms of triads, quickly moving to address characteristic seventh chords of various modes and beyond, or modes of other scales such as melodic minor and harmonic minor. The NOJ approach deliberately slows this pace: as students encounter different voice-led triadic progressions, both functional-harmonic and modal versions are explored at each stage.

For example, after learning a voice-led I-IV-V triadic constellation, the same shape configurations are applied to Mixolydian (I-bVII-IV) and Lydian (I-II-V) progressions. Though the same shapes are employed, the student must make the perceptual shift to hear each chord in turn as the modal tonic. In later exercises, an entire shape pattern for a field is morphed, or rotated, into different modal versions. Thus, an interwoven focus on modality leads to higher-order transformational insights of shape shifting and shape sharing.

Supporting songwriting processes: Integrating technical and creative work

NOJ has a distinctive teaching goal: supporting *songwriters* in writing *new* songs on the guitar. In keeping with that goal, a key aspect of NOJ is short-loop integration of technical exploration with individual creative work. In the slower-paced rhythm of the NOJ sequence, students encounter each new harmonic resource and instrumental technique with a cycle of both technical and creative activities: iterating and interweaving

¹⁷ In discussions of modality throughout this article, the term *modes*, unless further qualified, refers to the seven diatonic modes of the major scale.

technical with creative work at each stage serves to acknowledge and integrate both modes of engagement, and helps students immediately connect new materials with their individual expressive vocabulary.

It should be emphasized that NOJ is not intended as a general introduction to songwriting, and by design includes little material about general songwriting pedagogy: e.g., lyric writing, melody, song form, repertoire, etc. In part, this reflects the Berklee teaching environment, where NOJ-based classes are offered as part of an overall songwriting major offering extensive general songwriting curriculum. More intrinsically, NOJ takes a process focus on strategies for effective use of the guitar in writing songs, particularly exploration techniques to find novel musical starting points for songs. It is not especially germane, then, to compare NOJ to most general songwriting pedagogies.

Furthermore, published sources that combine a focus on guitar techniques and songwriting tend to be overviews, covering fundamentals of songwriting (lyrics, song form, etc.), general music theory, basic guitar techniques, and/or repertoire (for example, Rooksby, 2000, 2010).

In contrast, NOJ combines guitar techniques with a particular approach to songwriting process, especially processes for initiating songs. The approach to songwriting most directly reflected in NOJ is the author's "360° songwriting" approach to songwriting process (Simos, 2014). Central to this approach is the principle that songs can be initiated from *song seeds*, material in a variety of facets: lyrics, melody, harmony, or rhythm, as well as thematic or topical starting points (Simos, 2014, Ch 1).

For starting songs from chords or progressions, it is most common to be writing on or at the instrument. Songs seeds found on the guitar may involve an unusual chord or progression, a new tuning, or even a rhythmic pattern articulated in the right hand. NOJ presents students with many new chordal resources, in terms of inversions, modal progressions, etc. Though in principle one can start a song from any direction, when integrating such new musical resources and techniques into one's songwriting, there are advantages to beginning music first, e.g., from short passages incorporating the unfamiliar material. By encountering and responding experientially to the novel material in isolation, the songwriter begins to develop a sense of how to work creatively with that material. Thus, most NOJ activities directly addressing creative work start from musical ideas discovered on the guitar (as opposed to, for example, having students write lyrics and then find progressions for them, etc.).

Creative work in NOJ can take many forms. Students may select an excerpt of musical material from a technical exercise as a song seed: often a surprisingly small fragment – e.g., two adjacent voicings from a voice-led cycle – can be a sufficient, and evocative, creative starting point. The creative work of recognizing, isolating, documenting, and developing seeds is approached in parallel with the technical challenge of completing the exercise. Students may also be asked to compose small, self-contained original etudes, using constrained palettes of chordal resources. While these constrained compositional challenges are generally quite different from songwriters' typical starting points for writing a song, student songwriters are often inspired to expand these short etudes into full songs. These process approaches provide genre-independent ways of centering the creative work of songwriting as a response to exploration and discovery on the guitar.

To reasonably scope expectations for weekly creative work on assignments, students are generally then asked to take, at minimum, a *next creative step*: e.g., add vocal melody over the guitar part, or lyrics for one song section, or an additional musical section. In in-class performance, students demonstrate technical milestones achieved, and also share their creative work. As this work is typically fragmentary rather than whole songs, peer critique generally focuses on how the songwriter has incorporated new chordal resources

in the song; the teacher can encourage students' observation skills, and offer feedback on guitaristic points of interest useful to all students in the class.

Curiously, while such process approaches to songwriting with guitar are rarely addressed systematically in general songwriting pedagogy, they are often alluded to in *guitar* pedagogy. For example, Goodrick (1987), after introducing a challenging exercise to compose and voice-lead a 48-triad sequence, writes:

Also, it's a good idea to have a notebook and/or music paper at hand when you are working with triads this way. You may come across some voicings for part of the progression that you really like. When this happens, write them down immediately. Don't just write the chord symbols. Take the time to write the exact voicings, because inversions can really change the sound of a progression. You can use these little "gems" for songs and/or pieces later on. (p. 42)

Goodrick's "gems" are very much in the spirit of NOJ's jewels and 360° songwriting seeds.

NOJ supports not just self-accompaniment and arrangement of songs with guitar, but song *writing* on the guitar: that is, songwriting where the guitar plays an essential role in the composition process. As part of this process, songwriters must spend comparatively long dwell time on different chords: the more unfamiliar or unusual a chord voicing is, the more important this slow pace becomes. This technique has been acknowledged by other teachers. Ted Greene (1977), in *Modern Chord Progressions*, presents chordal material organized into short cellular sequences, which can be varied and combined into larger sequences in manifold ways. Greene suggests an attitude to deal with the experience of unfamiliar, initially discomfiting voicings which often arise through systematic projection of an intervallic structure within the scale:

If you encounter any progression that sounds at all strange or unattractive to you, make sure you are really playing all the right notes, and then play it a couple of more times. Many times your ear will adjust to something that, upon first hearing, sounded a little "out in the twinkies", and you may even begin to really like some of these sounds. (Some people who do not respond very favorably to modern chords at first, acquire a passionate love for them, with continued exposure.)

Actually, it is a good habit to repeat every progression, no matter what your feelings are toward it, because there is a strong possibility that you will hear new things in there each time (every chord progression is really a collection of melodies being heard simultaneously, and your ears might latch on to different ones of these melodies at different times). (Greene, 1977, p. 3)

This quote links directly to several other principles applied in NOJ's integration of technical and creative modes of engagement: to intentionally seek out, confront and work with disorienting or uncomfortable musical material, until it can be incorporated in a meaningful, prosodic way into creative work; and to work with chordal material in a sound-based way rather than (at least initially) through harmonic analysis. Several techniques help to cultivate skills of non-evaluative listening needed to integrate these resources into the student's technical and creative vocabulary:

- Playing the disturbing chord carefully and accurately is important, so that the sonic qualities are known to be those intended.
- Playing the chord or progression slowly and softly, and arpeggiating to hear individual notes and intervals, helps the student direct their attention to experiential rather than analytical responses.
- Repetition – both iterating during a single performance or practice session, and returning to material over a period of time – can gradually acculturate the ear to new material.
- Finally, seeking out multiple musical contexts, especially voice-leading contexts both preceding and following the material, cultivates a capacity for multi-perspectival hearing and interpretation.

For example, in the NOJ exercise *Ugly Chords and How To Learn to Love Them* (offered in the advanced section), students first find a chord that sounds "ugly" (a term deliberately left ambiguous) to their ears; they can use chance or aleatoric techniques, e.g., grabbing a chord at random, or deform a familiar chord

or shift it to a different fingerboard position. With ugly chord in hand (or under hand), they are asked to find four related chords: two predecessor and two successor chords, one of each which sounds *more* dissonant, the other *less* dissonant, than the ugly chord. This process is primarily experiential and exploratory, and not dependent on harmonic analysis of the chords in question (analysis can come later). After completing the exercise, the original ugly chord should sound different to the student's ear; ideally, a musical context for its use should have been discovered; and often, the student gains insights about their own musical aesthetics.

Lastly, it is important to note that NOJ's focus on songwriting means chords and progressions are always approached as accompaniment for *vocal melody*. (While in principle NOJ techniques can also be useful for instrumental composers, the emphasis is generally different.) Furthermore, in songwriting with the guitar as opposed to, for example, arranging an existing song, the songwriter is *composing the melody* as well as the progression. Thus perhaps the most common next creative step in NOJ exercises is composing a vocal melody – with or without lyrics – in response to a chord or chord progression seed. (This has implications, even for quite technical issues such as fingering choices, as discussed in a separate section below.)

In accord with this focus, the NOJ sequence is designed to draw attention to ways that a developing vocal melody, and even lyric and thematic content, may be influenced, not just by a progression's basic harmonies, but by *where* the progression is played: e.g., on different stringsets, in different inversions, voicings, and eventually tunings, with color notes provided by open strings interacting with moveable shapes, etc. This offers songwriters in particular creative motivations to explore these distinctive fingerboard resources.

The core topical sequence in NOJ

The previous section described some essential aspects of NOJ. Distillation of the overall NOJ approach into a detailed pedagogical sequence is one of those aspects. Ordering the technical resources introduced into a relatively fine-grained, incremental sequence, and refining and adjusting this sequence, has been a primary focus in developing NOJ. This section traces key steps of that sequence in more detail. The descriptions of these steps will reiterate and reinforce many of the general principles described above.

NOJ in the Berklee curriculum

As the NOJ topical sequence described here is implemented in the Berklee teaching environment, some context will be helpful in evaluating that sequence. A fuller account of the origins, influences, and evolution of the NOJ method is provided later in this article.

The NOJ sequence evolved in several stages. Early versions, presented at week-long music camps, were confined to five to six consecutive daily sessions. Later, adapting the method for classes at a local community music center, the material was expanded to a four- and then six-week session format.

After joining Berklee College of Music as faculty in the Songwriting Department in 2006, the author began expanding and adapting the NOJ method to specifically address the needs of songwriting students. This involved creating supplemental teaching materials, beyond the original documentation of a book-length set of core chapters (Simos, 2012), including compositional assignments for each step in the NOJ sequence, ranging from small etudes and exercises to more open-ended songwriting projects, textual and graphic resources, and video and audio demonstrations.

That work is now reflected in two levels of courses, designed to be delivered in a fifteen-week semester: Guitar Techniques for Songwriters (GTS), first introduced in 2008; and Advanced Guitar Techniques for Songwriters (AGTS), introduced several years later. The topical sequence described here essentially follows

the outline of semester syllabi for these two courses. (NOJ-based curriculum is also presented in twelve-week summer sessions, and in shorter workshops offered as part of week-long Berklee summer workshops.)

As this article is the first externally published description of the NOJ method, it is important to clarify that these NOJ-based Berklee courses were created under the auspices of the Songwriting Department, and are currently housed within and supervised by that department. They are not part of the curriculum of Berklee's Guitar Department; rather, they are viewed as courses specifically designed to support the needs of songwriters in the context of advancing guitar skills.

To better understand this context, and its implications for the scope and design of the NOJ-based curriculum, a brief description of Berklee's institutional structure, and the resources of the Guitar Department, will be helpful.

At Berklee, students declare *majors* (e.g., songwriting, composition, or performance) as well as *principal instruments* (e.g., guitar, piano, violin, or voice). Each instrumental principal defines rated *proficiencies* for the technical skills appropriate to that instrument.

Berklee has a long lineage of influential guitar pedagogy. Berklee's Guitar Department (with over 50 faculty members currently), has the most extensive, stylistically diverse college-level guitar curriculum in the world, with an illustrious list of faculty members (current and emeritus) and alumni, many of whom have developed and published their own extensive pedagogical materials for guitar, including William Leavitt (1986a, 1986b, 1987), Mick Goodrick (2001, 2002), and Jon Damian (2001, 2007), among others.

Much of this legacy has been incorporated and integrated into the technical proficiencies for guitar principals, as supported by courses and curriculum materials. These proficiencies exhaustively cover chordal resources such as dyadic and triadic structures of both tertiary and non-tertiary types, as well as extensions to four-note structures (sevenths and other upper-structure chords) and beyond.

This systematic treatment allows guitar principals to apply these resources in flexible, genre-independent ways. Many of these principals are focused on instrumental composition, soloing and improvisation; some are also working on songwriting. This level of harmonic discovery does, however, require a high level of technical skill and harmonic knowledge. Many guitar classes are at an advanced level, especially for songwriters who are *not* guitar principals, and perhaps not as technically proficient on guitar.

The Guitar Department also offers a rich set of other courses and labs, some oriented toward specific genres such as jazz or rock, some addressing specific performance skills such as improvisation. A number of courses, in the Guitar as well as Ensemble and other departments, address songwriting on guitar, from varied perspectives: from ensembles specializing in artists with distinctive guitaristic approaches such as Joni Mitchell, to style and repertoire-based classes, to guitar self-accompaniment for vocalists, to private instructors working with guitarist/songwriters in more individually responsive ways.

Despite the availability of these many educational resources, many Berklee students who self-identify as songwriters do not necessarily declare as songwriting majors; and many students who write songs primarily on guitar are not guitar principals. The NOJ-based courses (GTS and AGTS) are available to students with a range of proficiencies on guitar and experience in songwriting. They are open to both songwriting majors and non-majors, guitar principals as well as non-principals.

The first-level course (GTS) is targeted for intermediate-level guitar players who have also done some songwriting on guitar. Note that even this first-level class is not a general introduction to songwriting, or to guitar techniques. The NOJ-based classes are able to draw on students' exposure to the broad base of songwriting concepts and techniques available in Berklee's comprehensive songwriting curriculum (many of these classes also being available to non-majors). The guitar department offers a number of classes for beginning guitarists.

The second-level course (AGTS) offers advanced material for students who have completed the first, intermediate-level course, but also accommodates guitar principals of moderate proficiency, for whom an accelerated pace of presentation is more suitable. (However, even this second, more advanced course section does not reflect deeper levels of fretboard knowledge required by Guitar Department proficiencies.) Both classes are approved electives for songwriting majors and can also fulfill the major's requirements for a second semester of instruction on a harmonic instrument, otherwise requiring a second-level keyboard skills class.¹⁸

Despite offering two levels of NOJ-based courses, each class typically includes a range of skill levels in both songwriting and guitar technique, especially given that they are open to non-guitar principals and are not strictly proficiency-screened. Prerequisites for the courses mean students have had some introduction to harmony and theory; even here, though, students' backgrounds can vary considerably.

The courses are delivered as hands-on, workshop-style group classes (with class sections capped at about a dozen students). Students sit in a circle, with guitars out, and perform exercises and creative work live each week, offering peer critique, and often doing exploratory exercises live in class as well. GTS/AGTS classes often have a one-room schoolhouse quality, with experienced players coaching less technically advanced players.

Other faculty have delivered these courses, including Steven Kirby (Harmony Department), an accomplished jazz guitarist, and George Woods (Songwriting Department), a songwriting alumnus and experienced songwriter, guitar player, and teacher. Collaborative and iterative refinement of the NOJ curriculum has helped in documenting the approach, balancing its emphases and adjusting the sequencing of topics and assignment structure. Some fruits of this collaborative development are described later in this article.

The intermediate-level sequence

The first-semester (GTS) course focuses on close-voiced triadic structures in standard tuning. (This tuning is assumed in the following descriptions, until alternate tunings are discussed.) Over the course of the semester, major, minor, and diminished triads are covered, along with additional structures such as dyads, augmented triads and power chords (1-5-1 and 1-4-1 voicings).

- Before studying specific chord forms, an initial exercise, the *Jackson Pollock* exercise, is given to introduce the exploratory, discovery-based approach of NOJ, and to acquaint students with the details of reading and transcribing their own fretboard diagrams.
- Students are next introduced to the central principle of the Kink (as described earlier). This principle is initially presented as a new way of understanding and relating the second-inversion, first-position major triad shapes already familiar to them. Different inversions are then introduced and shown to follow the

¹⁸ Some elements of the NOJ approach, e.g., learning voice-led progressions of triadic inversions over bass lines, have also been incorporated into a songwriting class offering a similar, songwriter-focused approach to keyboard techniques.

same Golden Rule of the Kink. This yields the initial set of jewels: the nine close-voiced major triad inversion shapes illustrated in Figure 2.

- Students first employ these shapes with a simple exercise called *The Old One-Two*: building two-chord modal vamps out of major triad shapes moving up or down the neck on the same stringset by the interval of a whole step (two frets). This simple exercise helps students get less familiar shapes under their fingers, while developing ease of grip, mobility, an ability to hold a shape in fingering without string contact, and spatial orientation of vertical movement. Following an approach of Frank Gambale (2002), these simple two-chord riffs can be used to obtain any mode, with an open-string drone providing the appropriate modal tonic.¹⁹

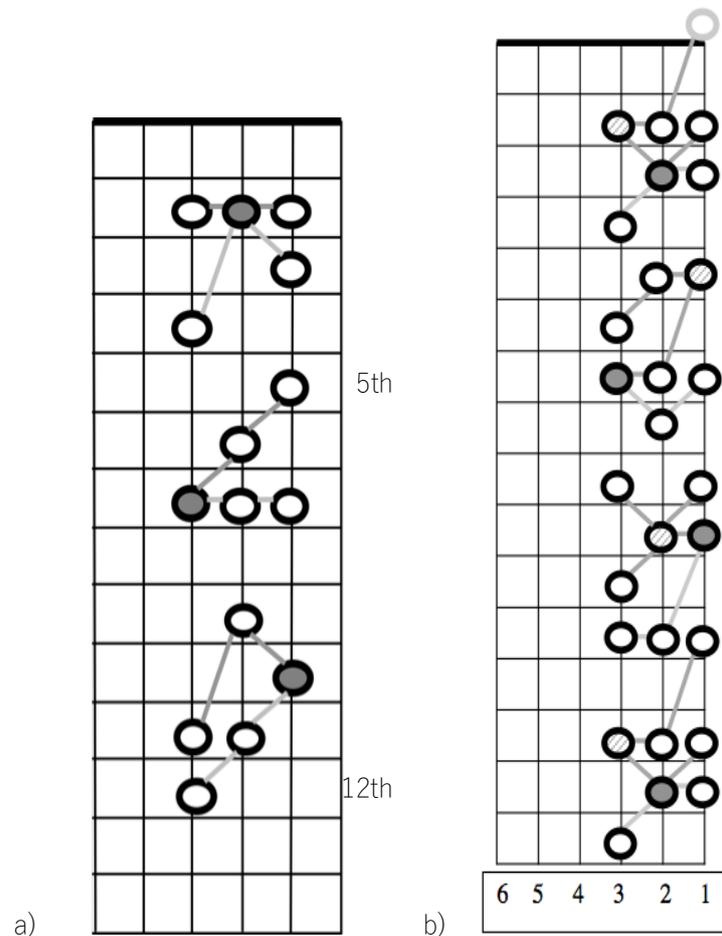


Figure 3 Diagram of neighbor pairs on [4 3 2] stringset (a) and constellations of major triad inversions on {3 2 1} stringset (b)

- Next, jewel shapes are visually and gesturally integrated into higher-level shape relationships. Note that the diagrams employ guy-wire connectors as cues for visually connecting notes into shapes. Students first link two triad inversion shapes on the same stringset into voice-led *neighbor pairs* at the interval of a fourth. Neighbor pairs for the {4 3 2} stringset are shown in Figure 3a. Triads of

¹⁹ Technically, these riffs, even with a modal tonic, do not completely characterize the modal scale, but also allow for playing modes of melodic minor. Later, after learning diminished triad shapes, two-chord riffs are re-visited, now built on the second and third degrees of the scale – a simple application of the generic modality compression technique introduced in Goodrick & Miller (2012).

each neighbor pair are linked by a common tone, shown with a darkened note circle. Each triad participates in two neighbor-pair relations, as the lower and upper neighbor respectively.

- Next, neighbor pairs are combined in turn into three-chord *constellations* surrounding each triad, treated as I, with voice-led IV above, V below; constellations for the {3 2 1} stringset are shown in Figure 3b. Common-tone connections between shapes are shown with darker coloring: darkened notes show root tones of the tonic (I) chord for each constellation; cross-hatched coloring show common tones between I and V chords. This sequencing facilitates learning voice-led progressions with this restricted chord palette (I, IV, and V), using first just two, then all three inversion shapes on each stringset. Each constellation incorporates all three inversion shapes for that respective stringset; each triad shape appears in a different position in each constellation. Each constellation also highlights differing sonic qualities: e.g., which notes are reinforced registrally in upper and lower voices of the triad, and where in the voicing the common tones between I-IV and I-V occur. Students work with constellations by first learning and playing common cycles or loops (e.g., I-IV-I-V, or I-IV-V-I), then composing their own short original chord sequences as etudes. Then, responding as songwriters to these varying sonic and voice-leading qualities, they select a particular position for a next creative step for a song, e.g., composing and singing a vocal melody over the progression.

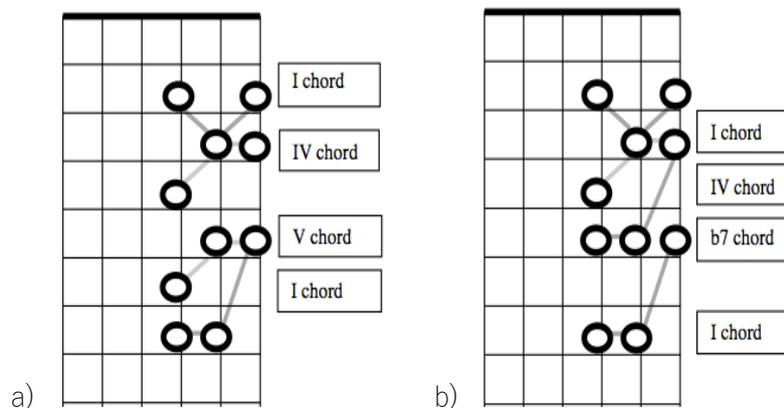


Figure 4 Diagrams of major (a) and Mixolydian (b) progressions using major triad constellations on {3 2 1} stringset

- Next students re-encounter modal aspects: not through new shapes, but by shifting which chord in the constellation is treated as the tonic (e.g., Mixolydian I-bVII-IV, Lydian I-II-V). Partial excerpts of fuller fretboard diagrams, illustrating constellations used for progressions up the neck, are shown in Figure 4, to obtain major (Figure 4a) and Mixolydian (Figure 4b) progressions. Labels to the right of the fretboard invite the player to visually parse the configurations. (Fret positions are not given, as these are moveable configurations.)

This principle recurs throughout the NOJ sequence: modal resources are presented as rotations of materials first encountered in a tonal (i.e., major–minor) context. Modality thus not only enriches the harmonic palette for songwriting on guitar, but also encourages a kind of perceptual multi-perspectivity.

- In successive exercises (not illustrated), students learn to see *lateral* connections of triad shapes, via crisscrossing arpeggiation patterns across the fingerboard, with each shape sharing two tones with a

next or prior inversion on an adjacent stringset. (See comments below about pacing aspects of this sequence, and about preferencing vertical over horizontal shape connections.)

- Minor triads are introduced next, initially as shape transformations of major shapes (e.g., dropping 3 to b3 for the parallel minor). Since this harmonic transformation can also be effected by moving a shape across the Kink *without* changing the shape, this introduces the notion of *shape sharing*. (In fact, due to the Kink structure of standard tuning, the nine minor triad shapes overlap or share six major triad shapes, relying on both parallel and median or leading-tone major-minor relationships.)
- With both major and minor triads available, the NOJ sequence spirals again to modal aspects, re-coloring I-IV-V constellations with various combinations of major and minor triad qualities. Students also learn a (partial) triad harmonization of the major scale, as a pattern (or *field*) along each stringset. The diminished chord on the seventh degree is initially avoided, allowing for a compositional *Six-Chord Challenge*, restricting the chord palette to the six major and minor triads of the scale. Besides delaying the encounter with a new jewel shape, avoiding the tritone-bearing diminished chord keeps the progressions diatonic, but less heavily tonal, and facilitates later modal transformations. As with other constrained composition challenges, students find this limitation surprisingly satisfying and creatively energizing.

Triad harmonization becomes a recurring strategy for self-directed exploration throughout the NOJ sequence. Although chord shapes move via parallel voice-leading through a shared scale, and thus are not linked by common tones as are earlier constellations, the shapes form a visual field that can be intuitively grasped and applied in new contexts. The advanced class of the NOJ sequence revisits this scale harmonization, for example, with non-triadic three-note structures such as three-part fourths, seventh (no third, and no fifth), and spread clusters.

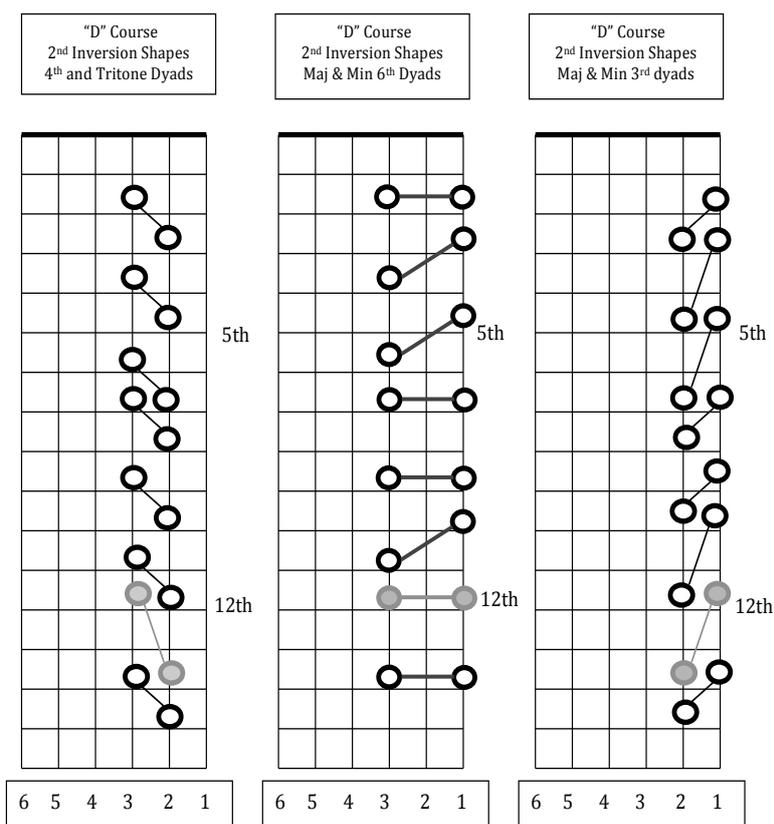


Figure 5 Inductive discovery of the diminished triad shape from dyad decomposition of the triad.

- Before progressing to diminished triads, students take a step back and decompose the triad harmonization, just learned, to simple shell dyadic (two fretted-note chord) reductions, as shown in Figure 5. Besides preparing for inductive discovery of the diminished shape (see below), removing the inner voice of a close-voiced triad prepares for octave transpositions of the note, yielding spread voicings of the triad. Dyadic textures are also particularly useful in songwriting. Since writing songs involves composing vocal melody over chords, often less is more: a sparser texture in guitar accompaniment is liberating for vocal melody writing. Songwriters often find the harmonic ambiguity, sonic openness, and rhythmic mobility of dyads to be creatively compelling. (A discussion of fingering options used for these dyadic sequences is provided later in this article.)
- The diminished chord is now presented as a new shape, discovered inductively via a visual overlay at the point where the field patterns of the three dyadic reductions of the triad diverge, as shown in grey in the diagram in Figure 5. The three inversions of the diminished triad are also presented in terms of various shape transformations from major and minor triads.
- With the missing piece of the diminished triad, students can now play full triad harmonizations of the diatonic major scale. Perceiving this pattern as a shape field enables visualization of the progression beginning on varying scale degrees, obtaining other modes by rotation.
- In addition, given access to major, minor and diminished triads, modes can also now be fully characterized with simple two-chord vamps based on triads on degree 3 and 2 respectively, played over a (modal) tonic open-string drone. This technique is adapted from the generic modality compression technique which Mick Goodrick, with Tim Miller, has exhaustively expanded to other scale-diatonic chord structures (Goodrick & Miller, 2012).

The advanced-level sequence: Non-triadic three-note structures

The first-semester GTS course typically concludes with close-voiced triad forms, while addressing a few other three-note structures such as power chords (i.e., 1-5-1 or 5-1-5/1-4-1 voicings). The second-level (AGTS) course provides more systematic exploration of spread voicings, suspensions and other non-triadic structures, and extends shape-based exploration strategies to alternate tunings. A key aspect of this extension of the NOJ sequence is in-depth exploration of non-triadic three-note structures, in primarily diatonic and modal contexts.

This extended emphasis on three-note structures represents a pragmatically selected subset of the chordal structures covered by guitar department proficiencies. This is in part in acknowledgement of many in-depth Berklee courses (primarily for guitar principals) covering fuller voicings for jazz or other instrumentally-focused styles. The three-note structures are also relatively easy to play; in contrast, the technical skills needed to play various flavors of seventh chords, and use them stylistically, is a larger jump beyond those required for triadic forms.

Though non-triadic three-note structures are generally less familiar, songwriting students quickly find effective ways to use them, in songs that are largely diatonic, even modal, in style – without invoking associations of the fuller extended chords of which they could be seen/heard as reductions. A subset of these structures is quite usable in harmonically simpler diatonic and modal contexts, though players in these styles rarely receive systematic introduction to these materials. For example, most intermediate-level players know a few "sus chords," likely not all their inversions. Other non-triadic structures might be familiar only from repertoire: for example, some spread-cluster textures characteristic of guitar-based songwriters such as James Taylor or keyboard-oriented songwriters such as Carole King.

In addition, these resources expand creative possibilities for songwriting: for example, by writing with chords with ambiguous roots, or even progressions with ambiguous tonal centers. Exploration of these

compositional possibilities could be bypassed by a sequence that moved too rapidly from triads directly to four-note structures such as seventh chords. Thus even advanced steps in the NOJ sequence continue to employ a slow-education pace, oriented to the needs of songwriters.

Mick Goodrick's taxonomy of chord types forms a foundation for this work (Goodrick, 2001, 2002, 2008). Goodrick establishes, for any diatonic scale, a closure of five distinct families of three-note structures: (1) triads; (2) suspended chords (*three-part fourths* in Goodrick's vocabulary); (3) *seventh no third* and (4) *seventh no fifth* (e.g., 1 5 7, or 1 3 7, respectively), and (5) *clusters* (three tones adjacent in the scale, most playably encountered on guitar in spread voicings).

Although these terms appear to embed functional-harmonic interpretations – for example, as sparse voicings of extended chords (sevenths, ninths, etc.) – the structures can be interpreted in manifold ways. In a songwriting context, with no particular leaning toward a jazz-inflected harmonic vocabulary, suspended chords and other non-triadic three-note structures can be approached in voice-led ways, or may emerge from dyadic forms moving against open-string pedal or drone tones. These structures can also be studied systematically from a shape-discovery perspective: in all inversions, *Kink-carnations* on different stringsets, and eventually, alternate tuning contexts. The same shape-based, voice-led approach applied earlier to working with triads naturally extends to these non-triadic, yet still spare structures.

They are challenging, however, from an ear-training perspective: it is initially quite difficult, for example, for most students to distinguish seventh-no-third from seventh-no-fifth structures, especially in inversions. However, by initially encountering these structures in an experiential, sound-led way, songwriters find them creatively generative, evocative of imagery, emotion and narrative, due in part to their harmonic ambiguity (even ambiguity of perceived chord roots or tonal center), voice-leading possibilities, etc. In keeping with this experiential approach, in NOJ non-triadic structures are collectively referred to, using a semi-onomatopoeic acronym, as *TINCTANT* chords (**T**hree **I**ndividual-**N**ote **C**hords **T**hat **A**re **N**ot **T**riads).

Working with alternate tunings

Comprehensive exploration of TINCTANT chords provides a useful introduction to more principled exploration of alternate tunings. Since even the restricted set of these structures explored in NOJ can be daunting for many students, presentation of non-triadic structures and alternate tunings is interwoven in the sequence of the second-level AGTS course.

The suspended (three-part-fourth) structures are examined first, as the most familiar of the non-triadic structures; furthermore, these are introduced first in the context of one alternate tuning, DADGAD, which is explored collectively by the class.

By a curious irony, the ubiquitous DADGAD tuning beloved of guitarists in traditional music – a tuning which was key to the author's original formulation of NOJ – when analyzed in terms of the structures "given" by the tuning's "native" stringsets (pitches on open adjacent three-string stringsets), could well have been designed by intent as an ideal laboratory for studying suspended (three-part fourth) chords.

6	5	4	3	2	1	strings
E	A	D	G	B	E	(standard)
-2	0	0	0	-2	-2	(distance map: tuning change by semi-tones)
D	A	D	G	A	D	(new tuning)
X		X				octave string map (as above)
	X			X		
X			X			X
		X				X
1	5	1	4	5	1	harmonic map
	5 th	4 th	4 th	2 nd	4 th	intervals
	1-5-1	sus4 (root)	sus4 (1 st)	sus4 (2 nd) or sus2		chords
		[as in standard]		shared stringsets		

Figure 6 Inventory of resources in DADGAD, including open-string octave relationships and structures emerging from adjacent three-string sets

This shared exploration of DADGAD is summarized in the tuning map shown in Figure 6.

- Stringset {5 4 3} is unchanged from standard tuning, allowing use of all triad shapes on that stringset, with new affordances of open D strings above and below. At the same time, the stringset is newly characterized as a root-position three-part fourth, with a moveable straight across-the-frets chord shape.
- {4 3 2} and {3 2 1} provide the other two close-voiced inversions, in tuning-native open-string configurations of three adjacent strings.
- This enables learning the sus chord-scale harmonization pattern as a field along each stringset – built of easily-grasped one-note shape alterations from the across-the-frets shape which restates and renders transposable each open-stringset intervallic structure. This introduces readily playable versions of all three intervallic qualities of three-part fourths – 1 4 7, 1 4 b7, and 1 #4 7 – in all three (close) inversions.
- In addition, the rich open-string octave relationships in DADGAD also facilitate obtaining, almost effortlessly, spread voicings of the three-part fourth structure.
- Other non-contiguous stringsets allow easily-grasped versions of spread triads (e.g., on {6 5 3}).

After learning three-part-fourth structures in the suspension-friendly environs of DADGAD, students pivot back to study these structures in the Kink-distinct positions of standard tuning, then other TINCTANT structures in a similar way.

Grounded in this comprehensive inventory of three-note structures, with DADGAD as a shared example, students then apply these orienteering strategies to more thoroughly exploring the resources of other tunings. For their final project in the second-level class, they select or invent (or, more likely, independently re-discover) a tuning of their choice, thoroughly explore its resources in an NOJ explorer’s log, then use that tuning as a thematic prompt for their final song project.

Rhythms of the NOJ sequence: Pacing, spiraling, weaving, retrograde

The NOJ pedagogical sequence has been presented in a progressive way, with each topic building on the previous one to reinforce discovery-based, integrative learning. Choices and variations in this sequence reflect specific design decisions, intended to support particular cognitive insights and connections and overall learning goals.

Some teachers, reviewing and evaluating the NOJ sequence, may be struck by the apparent slow pace at which new chordal resources are introduced. For example, formal presentation of even minor triad shapes is delayed for several weeks in this sequence. This pace, an intentional aspect of the sequence's design, serves several pedagogical purposes. In this respect, the NOJ sequence provides an example of a more general slow-learning approach in education (Honoré, 2005; van der Sluis, 2020).

The comparatively slow pace allows each successive structure to be worked with in varied ways, with multiple, overlapping visual and performative patterns, often juxtaposed in succession. This overlapping, slow pace of presentation facilitates increasingly fluid execution of chord transitions and progressions, allowing for more flexible bindings and associations of, for example, shapes and fingerings. (Simply put: if you want to learn and practice two alternative fingering patterns for a given chord sequence, you need more time.) Dwelling longer on each new structure builds in a certain amount of steeping time. Furthermore, the slow pace allows for exercises to challenge students' ingenuity working with constrained sets of chordal materials. For example, by composing short etudes using only major triads (but with modal variations), students learn more about the expressive resources of these chords. This focused combination of technical and compositional work can inspire creative and innovative responses to the material.

Another well-established educational principle is *spiraling repetition*: revisiting the same topics from multiple perspectives and in different contexts. One example in NOJ is use of two-chord progressions or vamps, canonic harmonic strategies in songwriting. These recur throughout the NOJ sequence: first in free-form exercises, then in simple *Old One-Two* modal vamps using major triads, later in the 3-2 modal compression vamps using major, minor, and diminished triads. Modal harmonic concepts are also revisited in a spiral context: first with two-chord vamps, then with three-chord configurations, later with six-chord sequences up the neck, etc.

A related principle in the NOJ sequence might be called *weaving*: presenting the same content from multiple angles and directions. At a broad level, this principle is manifested in the multiple ways triads can be connected on the fingerboard: vertically, via voice-led progressions up the neck; horizontally, in interlocked arpeggiations linking different inversions of the same chord; and transformationally, in shape-shifting connections. (Order of presentation of horizontal vs. vertical connections is discussed further below, as one design tension of the sequence.) At a more fine-grained level, weaving patterns show up in presenting *mirrored* concepts: for example, each major triad can voice-lead to a minor triad in three ways; conversely, each minor triad can voice-lead to a major triad in three ways.

Another, perhaps more counter-intuitive, aspect of the NOJ sequence is a temporary *retrograde*—presenting topics in a seemingly reverse order to their complexity. One example is the transition from triads *backwards* to dyads in the sequence as described above, rather than following a more logical progression, e.g., from one-note, to two-note, to three-note patterns, as espoused in some approaches (for example, Goodrick, 1987). Decomposition of triads into constituent dyads serves multiple purposes. It uses visualization to inductively reveal (or deduce) the diminished triad shape. It disrupts the steady progression of topics, an example of intentionally slowing (and varying) the pace: the freedom and spaciousness of writing songs with dyads after triad scales is often refreshing and inspiring for students. At the same time, it foreshadows

the progression from close-voiced triads, through dyadic outer-shell voicings combined with octave displacements, to later exploration of spread-voiced triads.

A pedagogical sequence can thus be viewed almost as a musical structure in its own right: with changes of tempo and dynamics, spiraling repetition or refrains – and even occasional retrograde motion.

Issues and tensions in the NOJ pedagogy

Valuable feedback for continued refinement of the NOJ method has come from experiential reporting from students with differing learning styles and creative processes, and from discussions among faculty who have taught the curriculum. This feedback has helped highlight certain issues and tensions in the approach. Some tensions suggest deeper tradeoffs in pedagogical design – analogous, perhaps, to questions such as the comparative benefits of fixed vs. relative solfège, or learning to sight-read vs. playing by ear.

Some of these known issues and points of tension are described in the subsections below. For each issue, some rationale for the current approach is offered, along with mitigating strategies and possibilities for future extensions. It should be emphasized that none of the rationale described here has been validated or assessed in terms of relevant research. These therefore suggest areas that would benefit from more structured research, comparison to other methods, and empirical evaluation.

Separate-fingering and contextual fingering strategies in NOJ

Although NOJ encourages an exploratory, even playful approach to the guitar, the method does prescribe specific left-hand fingering guidelines for chords and progressions. Meticulous attention is paid to fingering choices for chord shapes, with the intent of facilitating a flexible approach to fingering. These guidelines are, however, in marked contrast to many fingering strategies employed by advanced players and espoused by guitar methods that support advanced technical levels, e.g., Lang (1936) and van Eps (1980). In addition, some of the rationale for recommended fingering strategies in NOJ (including explanations provided directly to students) embeds assumptions about cognitive and performance aspects of guitar playing which are admittedly still working hypotheses, yet to be experimentally evaluated. Although fingering strategies are spotlighted at specific points in the NOJ sequence, the rationale for the NOJ approach to fingering is described here in a unified way.

A useful basis for comparison is the guitar method of George van Eps (1980), which in turn was influential to a number of subsequent methods, as outlined by Brennan (2021). Van Eps strongly emphasized the importance of fingering, and provided multiple, alternate fingerings for many exercises, stating explicitly that some of these fingerings facilitated easy, flowing continuity, while others, *by intent*, provided "awkward gymnastic fingering" (van Eps 1980, p. 26). The latter types of fingerings served pedagogical purposes, e.g., as exercises to build "finger discipline": i.e., to build dexterity, agility, independence of motion, strength of hand and individual fingers. They also addressed pragmatic aims, such as facilitating contrapuntal voice leading, or to obtain additional notes in the chord. Notably, some suggested fingerings involved fretting multiple strings with one finger (a partial or half *barre*), including on interior stringsets – requiring the fretting finger to bend backward at the joint. Van Eps's "fifth finger principle" (Brennan, 2021, p. 61) goes even farther, requiring one finger to fret notes on *different* frets.

The NOJ method explicitly eschews these more gymnastic fingering options. Fingering recommendations in NOJ are conceived with a primary goal of accommodating ease of playing, as well as issues of body diversity. Fingerings requiring extreme stretches are discouraged, especially those which work best only at higher positions on the fingerboard (where frets are closer), or on higher stringsets (requiring less reaching around

the neck with the hand). NOJ avoids fingerings requiring pronounced repositioning of hand and/or arm, or preferencing large hand size or hand strength. In teaching, attention is paid to ensure that players avoid extreme wrist flexion or extension in grabbing chords: students learn to combine motion of the forearm, hand positioning, and fingering choices to bring the hand to the desired region of the fingerboard in as relaxed a position as possible.

One reason for this more conservative approach has to do with NOJ's target audience of intermediate-level players, and the different playing contexts the method is designed to support. Fingering techniques may embed sometimes tacit assumptions about physical attributes such as hand size and strength.²⁰ Barre chords, for example, may require considerable hand strength to exert enough tension for a clean sound. It is significant, in this respect, that three-note jewel shapes tend to be ergonomically kinder to a wider variety of hand sizes. (Often students express surprise, and relief, that NOJ is so barre-chord avoidant.)

Even this conservative approach still offers technical challenges, especially to intermediate-level players. For example, some students struggle, at least initially, with triad shapes requiring modest stretches of three frets, but consequently more confident use of the little finger, e.g., the root position close-voiced major triad on stringsets {5 4 3}/{6 5 4} (sometimes referred to sympathetically as the *chord of woe*).

The NOJ approach also supports the activity of writing songs with the guitar, when the songwriter is often playing while simultaneously composing or improvising song elements such as vocal melody or lyrics. Novel chords, voicings and progressions may serve as inspirations and starting points for songs; but they must still be comfortable to play. In self-accompaniment in particular, the player needs to play and sing without diverting primary attention to execution of the progressions.

This difference in intended context of application has a substantial impact on technical issues in fingering. In particular, it affects the anticipated *pace of execution* of chord progressions. Although NOJ teaches some of the same voice-led progressions as jazz-oriented pedagogies, the progressions may be utilized musically in strikingly different ways. In soloing and improvisation, players typically want to be able to execute voice-led progressions *very rapidly*. In a chord-melody texture, for example, upper voices of chords are moving at the pace of the vocal melody, decorative moves at an even faster pace. In contrast, voice-led progressions in songwriting generally unfold at a slower pace relative to the vocal melody: typically, an entire line or lyric phrase is delivered against a single chord of the progression. In other words, the guitar provides an accompaniment to the vocal performance of the song, rather than a solo rendition of it. These differences have manifold implications: for choices of fingering, right-hand picking or strumming patterns used to activate a voicing, preference for voice-led progressions centered on a single stringset, open strings used in combination with fretted-chord shapes, etc.

Furthermore, songwriters self-accompanying on guitar seek voicings and textures that provide a sustained, flowing sound. In chord-melody solo playing, the guitarist may use advanced techniques to simultaneously provide a bass line²¹. In contrast, songwriters writing on guitar may use open strings for pedal effects and sustained sonorities: not only lower strings serving as bass pedals and drones, but also upper-range open strings providing coloristic chiming effects.

²⁰ These biases may even reflect subtle gender-specific dynamics. On one occasion, a visiting guitarist walked into a GTS class of mostly women students, leading off with an obviously well-worn faux-military quip as ice breaker: "All right everyone! Drop and give me twenty scales!" – only to be met by a roomful of horrified gazes. (Personal recollection of the author)

²¹ Note that this was apparently a motivation for van Eps' addition of a lower seventh string, as described in the earlier-cited quotation from Ted Greene's interview with van Eps.

Still, though a songwriter/guitarist may be playing simpler, triadic voice-led progressions, more slowly than a soloing jazz guitarist, an essential core of technique is still required. Knowing all the inversions, and responding to the varied voice-leading textures they offer, significantly expands creative possibilities for songwriters previously accustomed to mainly first-position campfire chords and barre chords. Fingering choices, while perhaps less gymnastic and virtuosic, must therefore still be carefully attended to.

In this respect, two specific aspects of NOJ fingering strategies are of particular relevance.

- *The separate-finger principle.* In exploring fingerings for each shape, the NOJ instructor preferences, at least initially (that is, when students are first learning and internalizing shapes), use of *separate fingers* for each fretted note (even notes on adjacent strings and the same fret). This means avoiding, not only complete barre chords, but even *mini-barrés* of one finger barring two or three strings.
- *The contextual fingering principle.* At the same time, chord shapes are presented, again initially, with *alternative*, contextually determined left-hand fingerings. When first learning shapes, it is easy for the student to fix on a *single* preferred fingering for a given shape. But it is characteristic of the small jewel configurations that most have several viable fingering options, depending on how chords are approached or departed from in the context of a progression.

These pedagogical techniques, in combination, are intended to help students develop a flexible repertoire of fingering strategies, movable to any stringset.

These strategies do raise issues in teaching. More proficient students may intensely resist the effort of unlearning familiar grips, reinforced by many years of playing, in order to decompose barre chords, avoiding even partial-barre fingerings. They may feel such restrictions to be frustrating and unnecessary. Providing an explicit rationale for the fingering guidelines is a way to acknowledge these frustrations. The rationale provided in the NOJ teaching context is that individual-finger fingerings help reinforce the jewel shapes as visual and tactile patterns: that is, the effort required to position each finger helps in learning the shape and being able to engage with it in a transformational way. In addition, there is the pragmatic issue that many mini-barre fingerings are optimized for shapes played on the upper {1 2 3} stringset and are difficult to transfer more readily across (especially to interior) stringsets. Learning shapes with separate fingers for each note thus makes it easier to transfer shapes – arguably, perhaps even easier to *recognize* the similarity of shapes. Finally, the strategy is presented as a *learning* strategy, rather than a permanent proscription. Once shapes are known, it is easy to apply mini-barre fingerings where appropriate; if learned first, however, these tend to bind less flexibly to the shapes. The goal then is to develop an intuition for finding the contextually determined fingering needed to most comfortably play a shape in any given progression or configuration.

The complementary principles of using separate fingers for chord notes, and knowing alternate fingerings for a given shape, come together in another, higher-level fingering principle in NOJ. This is best illustrated through discussion of fingerings for dyadic sequences such as those shown previously in Figure 5.

Again, it may be useful to compare these NOJ fingering suggestions with those of van Eps (1980). In dyadic (two-voice intervallic) motion, van Eps offers fingerings involving large stretches for the hand, especially for the little finger. In his principle of alternation, repeating a finger in consecutive chords is an awkwardness to be avoided: he compares it to "hopping on one leg." (p 5) He therefore provides several alternative fingerings for the same pattern, all involving a "walking alternation" with *no* repetition of a finger in adjacent positions. This optimizes for quiet hand motion and great suppleness of finger dexterity within one position.

In contrast, when working with a dyadic series of this kind in NOJ, the player makes *intentional use* of repetition of fingers in consecutive fingerings: via what are called *gliders*, *sliders*, and *anchor* fingerings. A glider is a finger which stays on a string in a move between chord shapes. (occurring most often in voicings moving along the same stringset). Sliders are gliders where the finger maintains contact with, and possibly a degree of pressure on, the string: this provides tactile distance tracking (and, in some style-specific situations, an audible sliding effect). An anchor finger remains on the same string *and* fret in a move between shapes.

Clearly, though these fingering options are easier for intermediate players, they would not support as well the fast playing required, for example, in chord-melody soloing. In song self-accompaniment, however, they allow for fluid, relaxed motion between chord positions.

Yet alternate fingerings still play an important role in NOJ, especially in these sequences. The active principle is: when a shape changes, look also for a change in fingering. The rationale is: if the shape changes, yet fingering remains the same, there is more likely be a change of position (or attitude) in the hand and/or arm. (The converse does not hold: when moving between chords of the same shape, on different frets and/or stringsets, either the same or different fingerings may be possible, even efficient, choices.)

Each series of chord shapes generally allows for at least two alternate fingerings, equally comfortable for the hand: usually involving use of a different finger, on a different string, as the glider. Students are encouraged to practice these sequences with *both* fingerings. In addition, *either* fingering option presents specific moments of difficulty: physically easy to execute, yet requiring a kind of mental gymnastics – a rubbing your tummy/patting your head moment, so to speak – where the *hand* is traveling (i.e., positionally translated) in one direction, while finger transfers are felt to move in the opposing direction. Although not requiring the athleticism and virtuosic technique of van Eps's more challenging fingerings, the student's careful attention to *complementary* alternative fingerings in NOJ can produce an experience of ease, fluidity, sonic continuity, and flow – essential to songwriting on the guitar.

Notation and visualization strategies

NOJ's visual, shape-based approach is intended to spark new insights and connections by the student. Although the importance of diagrams in NOJ has been discussed, no single, ideal notation best conveys or support such insights. Instead, NOJ employs a variety of complementary notations and graphical visualizations, supporting varied learning styles and perceptual orientations.

Sometimes the learning value of a given notation is enhanced by the information left off the notation, or by use of separate or side-by-side notational formats. For example, the contextual fingering strategies described above are reinforced by side-by-side notation conventions, as shown in Figure 7. Rather than directly embedding fingerings onto note position circles, fingerings are indicated to the *right* of the fingerboard. This also allows for annotating choreographic moves between fingerings for successive chord shapes/positions, for example, *sliders* – fingers that track along the same string in a chord move – indicated by curved lines between common finger numbers in adjacent shapes.

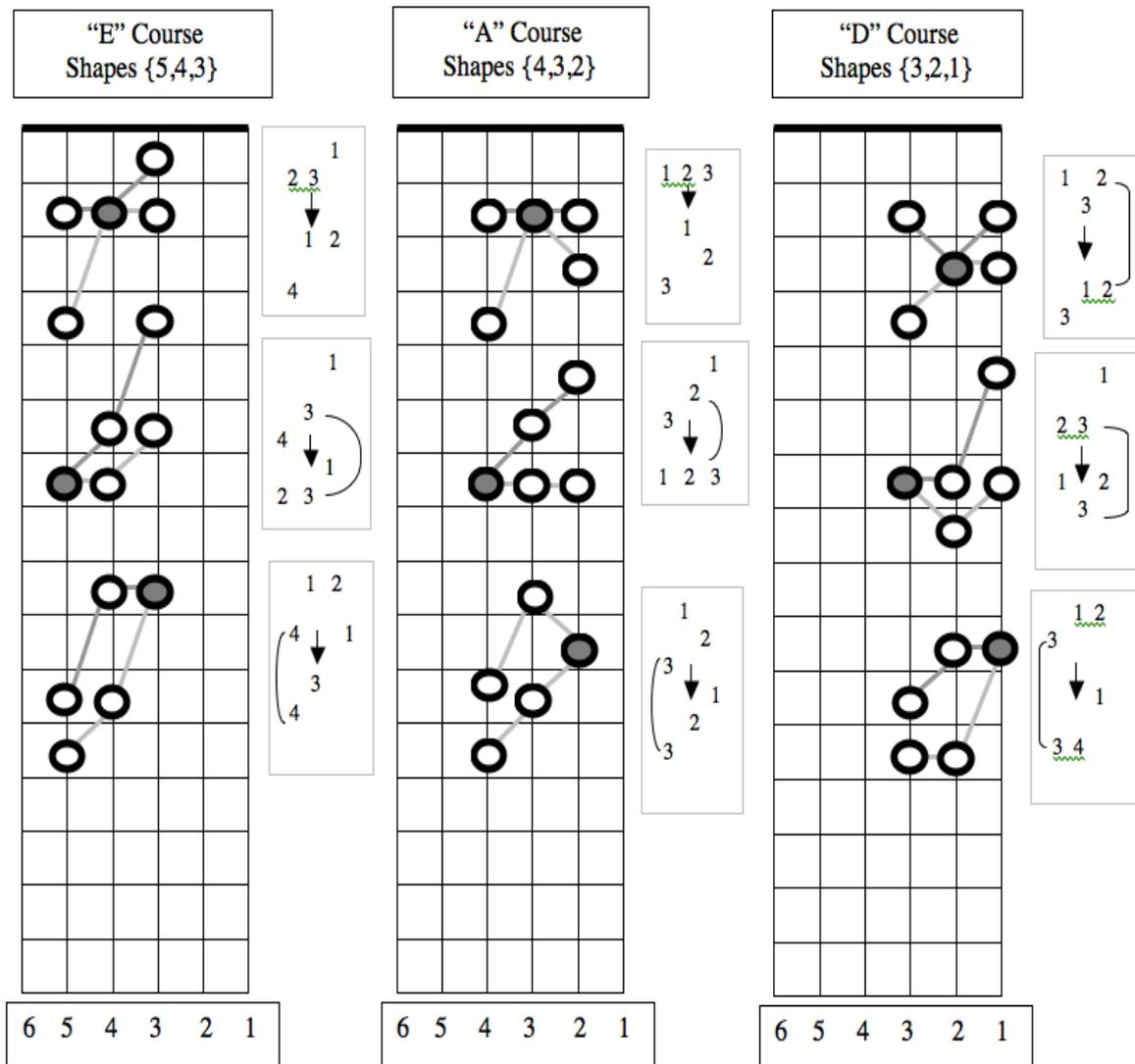


Figure 7 Side-by-side notation for contextual fingering choreography: with sliders

More recently, this separate or side-by-side notation principle has been extended to right-hand patterns. Left-hand shapes and progressions can be sounded (or *activated*) by varied finger-picking, strumming, or flat-picking patterns. Conventional tablature, a common alternative to staff notation for guitar, is well-suited to purposes of learning specific pieces of repertoire, where left-hand positions and right-hand patterns are tightly synchronized. Yet by design, tablature compiles left-hand shapes and right-hand string (and sometimes fingering) patterns.

A separate notation for the sequence of strings sounded in executing right-hand patterns can help players recognize these conceptually *as* patterns, which can be applied to different left-hand shapes, maintained as those shapes move in voice-led paths, and shifted to different string sets, both adjacent and non-contiguous. Two simple approaches to this notation are shown in Figure 8. The particular pattern shown, sometimes referred to in NOJ teaching as a *cross-stitch* pattern, can be quickly notated in a linear fashion, where left-to-right orientation refers (as in tablature) to time, e.g., events taking place at eighth-note intervals. The example shown, for example, is a pattern unfolding at an eighth-note pace over two measures.

The second format, shown below, helps associate the pattern visually and spatially with the layout of the strings; the numbers lower on the page representing lower-pitched strings (closer to the player). Leaving the executing fingers or picking strokes unspecified allows alternative options for fingering choices or flat-picked directional moves, or even executing the same pattern with finger-picking or cross-picked flat-picking techniques. At the same time, by stripping away extraneous detail, the notation helps to highlight subsidiary patterns, such as the alternating 2-1-2-1 in the upper strings against the 5-5-5-6 in the bass notes.

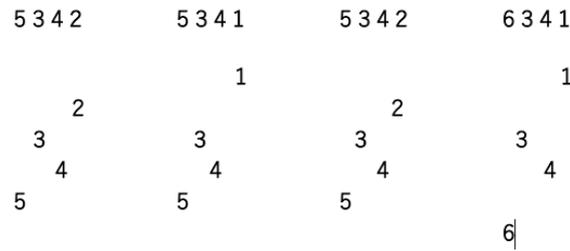


Figure 8 Two alternative notation formats for a right-hand finger- or cross-picked flat-picking pattern: the layout below reveals sub-patterns

Both left-hand and right-hand notations are ways of visualizing embodied motion. But visualization aids can also be used to convey more abstract musical relationships. One example is a *clock rotation diagram* shown in Figure 9. This explanatory diagram was developed by Steven Kirby, a Berklee faculty member who has taught NOJ-based courses for many years and who has also worked extensively on graphical representations of musical concepts. The diagram addresses an aspect of triad neighbor relationships that many students find counter-intuitive. Voice-led I <-> IV or V <-> I transitions use shapes that overlap by a common tone. Students often struggle to grasp, and remember, that *second-inversion* triads voice-lead *up* the neck to *first-inversion* triads – in effect, moving downwards through inversion lower tones, while upwards in harmonic movement.

The clock rotation diagram provides a visual and mnemonic image for complementary circular paths between neighbor pairs: moving by fourths, along a counter-clockwise path, from second-inversion, to first-inversion, to root-position triad shapes; and by fifths, along a clockwise path. The motions illustrated in the diagram are metaphorical and conceptual, rather than depictions of embodied physical motion on the fingerboard.²² Use of such visualization aids, at various points throughout the NOJ sequence, have proved helpful ways of reinforcing student comprehension and retention.

²² Introducing the diagram recently to a roomful of puzzled students, the author described it as movement through “confusion space.”

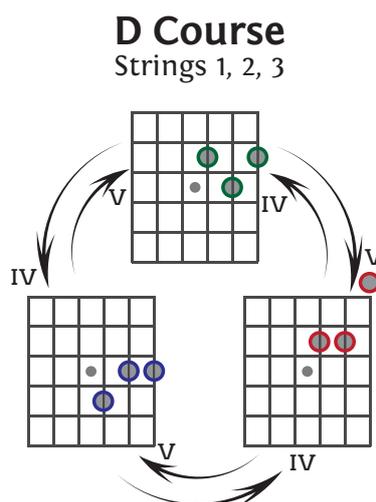


Figure 9 Clock rotation diagram of triad neighbor shape relationships.

Finally, experience has shown that diagrams are more effective when students either re-create them by hand, or color in or otherwise annotate diagrams as provided. The activity of creating one's own notations can generate insights in a different way, helping students internalize and take ownership of this imaginative capacity. In keeping with this principle, besides using provided diagrams and other visual aids, NOJ students are encouraged to create their own "research notebooks": filling in fingerboard charts, choosing conventions of color, note shape, connecting lines, layout, etc. that work for them, and even constructing their own diagrams and alternative visual representations.

Teaching through repertoire vs. original student work

Arguably, an unusual aspect of NOJ teaching materials is that they are *not* structured around a specific repertoire of example songs. The rationale for this exclusion of repertoire is partly historical, partly practical. NOJ originated in teaching materials for a specialized genre of traditional folk music with a strong modal component: a repertoire that is typically unfamiliar to the songwriters who are now the primary audience for the method. Also, as in other songwriting-oriented curriculum, fixing specific repertoire as examples creates a risk that curriculum materials will become outdated, or may appeal only to students with certain stylistic preferences. Certain canonic songs have proved useful, and universal enough, to be included in core materials. For example, *The Lion Sleeps Tonight*, with its regular cycle of I-IV-I-V, makes a perfect etude for practicing voice-led progressions of triads with upper and lower neighbors. Here the repertoire is used as a stepping-stone to students composing original progressions using the same restricted palette. But such examples are exceptions, in a pedagogy that otherwise gives preference to self-contained exercises and etudes, or students' own creative efforts.

Nonetheless, it is undeniable that some students learn best, and/or report that they do, through learning and practicing existing songs. To accommodate these different learning styles, as students encounter new resources and progressions, they are encouraged to seek out songs familiar to them that utilize (and may even be built around) these resources. This helps to emphasize the relevance of the NOJ materials to the students' own preferred musical genres and artists.

Such recognitions can apply even to isolated chord shapes. In a recent Naming the Shapes session, one student volunteered the name *Rush* for the shape associated with campfire D (more precisely, if clunkily, characterized as the second-inversion close-voiced major triad shape on stringset {3 2 1} in standard tuning). The student explained that Rush, one of his favorite bands, uses this shape prominently in a number of their songs, sliding up and down the neck – so that he instantly associated the shape (and sound) with that band. While such sonic connections and associations may be very helpful for student learning, they are by nature highly individual: it would be difficult to embed such associations in the core NOJ materials.²³

NOJ etudes and mantras, as described below, also provide an important middle ground between existing repertoire and original student work. The NOJ materials contain many already-composed etudes; students are also encouraged to create their own at each stage of the sequence. Future versions and possible genre-specific extensions of NOJ could certainly benefit from more extensive libraries of example repertoire, to better support multiple learning styles.

Absolute vs. relative orientation to the fingerboard

By and large, NOJ preferences awareness of *relative* shape relationships over absolute, key-related orientations. This is reflected in several aspects of the NOJ pedagogical sequence. Even after shapes are clearly correlated with harmonic structures, NOJ avoids binding a given shape to a specific string and fret position, and so to a quickly-identified chord root. This reflects NOJ's transformational approach to chord shapes in relation to the fingerboard. As a practical matter, though, one side-effect can be that students might initially be slower to recognize where on the fingerboard to grab a chord of a specific root in a specific key. This seems counter-intuitive to some students and can lead to disorientation and frustration.²⁴

One rationale for this preference is NOJ's focus on the distinctive work processes of songwriters. An accompanist or session musician needs to be able to move confidently to play a given chord in a given key. When *writing* a song, on the other hand, it is less important in some ways to be thinking in a specific key: in a sense, one is always writing in the key of 1.

Yet songwriters are clearly influenced by the sonorities of different keys. Also, since songwriters *sing* vocal melodies over progressions as they compose, the key(s) they play in will interact with the range or timbre of their singing voice. In addition, there is the technical aspect of how a given progression lays on the fingerboard in various key positions. Choice of key, inversions and voicings, and tunings can thus dramatically influence, not just the vocal performance, but the actual chord progressions, melodies, and even lyrics and thematic content of songs written with the guitar.

The NOJ approach is to emphasize key positions that exploit affordances of open strings with fluidly-moving jewel shapes. Songwriters can then simply use a capo to move positions into appropriate keys for singing, while writing or later in performance. Often students react as if this was a form of cheating! Yet, although session players, sight readers, or improvisers would not want to be overly dependent on capoing in this way, in a songwriting context it is an acceptable workaround.

Students sometimes do not initially grasp this approach: having learned the shapes, they may write in awkward positions in order to be in a desired key. For example, if a student wants to write in the key of F,

²³ In fact, this association was so individual that the name Rush did not get the class vote for that shape: instead, Grail won the day. (Thanks to Fall 2021 students Jackson Ulmer and Kate Johnson for permission to reference this anecdotal example.)

²⁴ Indeed, it might be reasonably argued that the popularity of the CAGED scheme described earlier in this paper is owing in part to its way of reconciling a shape-based structuring of the fingerboard with a easier overall key orientation.

they may use jewel shapes, sounding only the fretted strings involved in the shapes, with no available open strings. This may produce a constricted sound and texture; then, in frustration, the student falls back on standard campfire or barre chords. To address the problem, the teacher might suggest the simple recourse of capoing at the first fret to play out of E position shapes, now utilizing open strings for a fuller sound.

Another rationale for NOJ's emphasis on relative shape knowledge is as preparation for playing in alternate tunings, and for experimenting with new tunings. Training to rapidly associate a given fingerboard (string and fret) position with a specific pitch optimizes for efficiency in one particular tuning: again, this is good preparation for session playing, chart reading, soloing and improvisation. Is such trained efficiency, however, potentially a disadvantage for cultivating a more relativistic kind of shape sense? Though the current NOJ method is weighted toward the relativistic approach, this remains an open question for further research.

Vertical vs. horizontal shape connections

A related issue concerns the order in which shape connections are taught, specifically, vertical (up and down the fingerboard) relative to horizontal (across the fingerboard) connections. The patterns themselves are direction-agnostic; and eventually both sets of interconnections are presented – as part of the Net. Yet a pedagogical sequence must commit to some ordering; and the current NOJ sequence presents vertical connections first.

As with the relative vs. absolute key/tonality issue described above, this approach can engender resistance from some students. Intermediate to advanced players familiar with barre chords often see maximizing horizontal binding as desirable: i.e., that it is better to grab versions of chord shapes with more notes.

The rationale for this sequencing is, again, in part pragmatic. For purposes of songwriting on the guitar, vertical connections lend themselves readily to voice-led progressions, stabilized positionally along a particular stringset. This helps create continuity of sound, and helps developing players work on creating consistent and fluid right-hand picking or strumming textures.

In another respect, this aspect of the NOJ sequence embeds strong (and currently still speculative) hypotheses about cognitive and learning principles. From a learning standpoint, the author's teaching experience and observation suggests that presenting vertical connections first in the sequence helps players keep the smaller, three-note jewel shapes mobile, i.e., both conceptually and performatively independent. One possible explanation is that players may tend to more rapidly chunk horizontal connections (i.e., between overlapping three-note shapes) into larger configurations; these can then begin to rigidify into fuller chords, constraining fluid motion among shapes. The extreme case is full barre chords, which control, but also limit, the affordances of different positions.

Presenting vertical connections first is intended to counteract such tendencies; encountering separable shapes in varied contexts and configurations, and seeing them as the result of different transformations, stabilizes shapes both visually and in tactile experience. After this presentation, teaching horizontal connections will connect and reinforce the prior material in new ways. Of course, more enterprising students will discover the additional horizontal connections for themselves, earlier in the sequence; such student-initiated discoveries are always welcomed.

Open-string affordances

Several aspects of NOJ – emphasis on small jewel shapes, avoidance of across-the-neck barre chords, preference for relative over absolute orientation, and early sequencing of vertical connections on the

fingerboard – bring to the foreground another set of problems: the intrusion of unwanted open-string tones when using chord shapes at arbitrary positions on the fingerboard.

In NOJ, open strings are approached as affordances as much as problematic resources: the method encourages attention to and exploitation of interactions of grasped chord shapes with open strings. The most common jewel-shape textures used in an NOJ context are configurations of *up to three fret-articulated* notes, in association with one or more open strings. These textures encourage voice-led or parallel progressions along string sets, in combination with surrounding open strings: including both lower-pitched open strings serving as implied tonic pedals, and higher-pitched strings adding tensions and color notes. This proves a very guitar-friendly way to approaching triad-informed chordal writing.

At the same time, executing these textures and effects requires meticulous attention to technique: hand position, angle, and tension vs. ease of grip for clean tone; fingerings, and shifts of fingerings in chord transitions; and right-hand finger- or flat-picking techniques to bring out separate melodic lines.

In addition, although the scope of the current NOJ sequence does not extend to fully-grasped (that is, fretted) four-note structures, combining movable triads with strategically employed open strings facilitates easily-played versions of many such structures. This reflects the influence of Mick Goodrick's approach to characterizing fuller chords in terms of constituent triads (2001, 2002). Standard tertiary harmonic terminology builds fuller chords from successive thirds stacked *above* a root tone. But a seventh chord can also be conceptualized as a triad with a bass note added a third *below* the triad root. That bass note can be progressively dropped by thirds, yielding successive four-note structures: seventh, triad-over-bass-note-I, and triad-over-bass-note-II. In this formulation, a hybrid chord such as G/C, rather than only being treated harmonically as a ninth chord with a subtracted third, can be approached and used in varied ways, including voice-led and modal textures.

Octave relationships

The tension between relative vs. absolute positional learning came into clearer focus as a result of collaborative discussions among faculty working collaboratively on the NOJ materials. These discussions revealed an important middle ground in reconciling this tension, inadequately supported in earlier versions of the NOJ materials: *octave relationships*. This emphasis helps to reconcile the gap between learning (named) note positions and a more strictly relative shape-based approach:

- Octave relationships involve string positions on non-adjacent strings, at a distance of two (or, due to the Kink, three) frets. These relationships enable players to project more easily from known position-tone relationships to less familiar fingerboard regions and positions.
- These connections also help players better visualize and integrate *lateral* relationships of jewel shapes on the fingerboard: less essential for voice-led sequences (where same-stringset shapes are preferable), but important for a seamless spatial patterning of the fingerboard.
- Octave relationships also provide a foundation for 1-5-1 and 1-4-1 voicings (so-called power chords). These can be approached as either octaves with a filled-in fourth or fifth interval, or as fourth or fifth dyads (two-note chords), intensified with an octave doubling of one of the voices.
- Octave relationships also facilitate the transition from close to spread voicings, by replacing inner voices of a close-voiced triad with its octave either above or below.

Taken as a whole, the above discussion of these interconnected issues can provide the first steps of a useful case study of the iterative and collaborative process of designing a detailed pedagogical sequence, empirically evaluating and refining it through teaching experience.

Supplemental techniques in the NOJ sequence

We have traced the main topical sequence for both sections of NOJ-based semester courses in the Berklee songwriting curriculum. The following sections detail some supplemental techniques supporting this sequence. As each new technical resource is introduced in the NOJ sequence, students integrate that resource into their creative vocabulary through a variety of process-based explorations and compositional exercises, including:

- aleatoric or chance operations;
- shape-based or choreographic procedures and games;
- finding whimsical imagery and names for shapes;
- self-directed composition challenges and etudes;
- mnemonics and mantras for harmonic and shape relationships;
- and the deductive and imaginative work of pattern-seeking, challenges, and puzzlers.

These techniques are intended to engage and support diverse learning styles and modalities, and to help inculcate an attitude that unifies technical learning and creative work as allied, not antagonistic, activities. Selected descriptions of some of these supporting techniques are provided below.

Naming the shapes

While the NOJ jewels metaphor is intended to evoke the versatile three-note forms in general, it is also useful to cultivate awareness of each chord shape as a visual pattern, especially in relation to visually organized neighbors. This visual sense is supported by the *Naming the Shapes* exercise, given early in the first-level GTS course.

After being first presented with the nine close-voiced triad jewel shapes, shown earlier in Figure 2, students are asked to create names for each shape: the more fanciful and humorous the better. Besides the mnemonic benefit, and providing a shared class vocabulary, the names, and the activity of naming, are intended to help students avoid cognitive binding of shapes to particular stringset and fret positions or chord roots, and to facilitate later recognition of shapes in new contexts and associations with different chord qualities. Therefore, by intent, the names should *not* describe harmonic qualities, which apply to only certain usages of the shape. For example, the diagonal shape on the {4 3 2} stringset could be called *root position A major* with root A on the fourth string, seventh fret; or a *root position major triad* positioned elsewhere along the neck on that stringset. Yet the same shape on the {3 2 1} stringset yields a root position *minor* chord, and an augmented chord on the {5 4 3} stringset. The NOJ materials provide a common metaphorical name for this one shape: *Javelin* (the author reserves the prerogative to *own* this name in all classes).

Students name all other basic triad shapes, working independently; then, in a plenary session, the class works through the shapes, sharing, then voting on, the names. By the end of this voting session – calling out changes like: Scooter moves to Butterfly – students’ recall for unfamiliar shapes are often already observed to improve. Students also learn from one another’s varied choices of imagery, imputed motion, or metaphorical associations for shapes. Students who provide the winning name for a shape are punished (ironically) with an optional challenge: to write a song employing the imagery of their chosen shape name as a central theme, using that chord shape as extensively as possible in the song. The multi-modal, collaborative, intentionally humorous activity – developing a shared yet personalized chord shape-name lexicon – quickly and vividly creates a sense of class community.

Etudes, mantras, and puzzlers

In the NOJ context, the term *etudes* is used in a special sense: to refer to short, protean compositions based on chord sequences or progressions, illustrating and exploring specific voice-leading relationships at the constellation level and beyond. When they do not incorporate dependencies on open strings locking them into specific positions, etudes can generally be practiced in all inversions, in close and spread voicings, on all stringsets, and even alternate tunings. In this respect, though they do represent important creative work, etudes differ from the creative work that initiates a specific song; the latter involves selecting a particular position, inversion, or voicing from those explored via the etude, one which evokes a next creative step, i.e., material for the song to be written.

Etudes can also be enriched with vocal *mantras*, providing mnemonic and melodic guides to voice-leading principles embodied in the etude. Etudes and mantras taken together can reinforce surprising harmonic insights. For example, one etude involves voice-leading from a major triad, in turn, to its respective parallel, median (or leading-tone), and relative minor related triads; a complementary etude works from the minor triads to their respective major forms. This simple exercise provides an elegant fingerboard realization of some aspects of neo-Riemannian theory. Yet there is enough variability – in the combinatorics of visitation paths through the forms, melodic articulation of voice-leading lines, playful lyricizations etc. – to allow students a sense of creative engagement.

Another way of engaging creativity is to present students with riddles or *puzzlers* (the name being a tribute to Boston's beloved *Car Talk* radio show). Puzzlers may be offered in class sessions or posed as optional questions along with weekly assignments; they may also provide a focus for having students work and discuss in teams.

One example puzzler asks students to identify shape-sharing relationships among major and minor triad shapes. Although nine major and nine minor triad shapes are required for full coverage of the fingerboard, due to indirect effects of the Kink these major and minor triad shapes overlap: that is, not eighteen but only twelve distinct shapes are required. Three shape-sharing pairs result from the *third* of a chord moving across the Kink, creating a parallel major-minor triad relation. Three other shared shapes result from a major-chord *root* moving across the Kink: in effect dropping that tone to the seventh, yielding a minor triad in a different inversion. Two of the six shape-sharing pairs are especially hard for students to spot: those between major triads on stringset {3 2 1} and minor triads on stringsets {5 4 3} (or {6 5 4}). Even after these are visually identified, understanding *why* they occur requires students to conceptualize the fingerboard in a new, rotational sense.²⁵

Genesis and development of NOJ

The main body of this article has presented NOJ in its current form, situating it in the context of other pedagogical approaches and related research. As emphasized earlier, this presentation was not an actual design *history* of the method. This section provides a more chronological account of the origins, influences, and evolution of NOJ. This additional context may illuminate some tacit biases in the method's scope, emphasis, and approach. It may serve as initial materials for a case study of how guitar pedagogies evolve from the distilled experience of their developers as practitioners and teachers.

²⁵ Thanks to Jonathan de Souza for discussions clarifying this lateral/rotational view of the guitar fingerboard, as referenced in De Souza (2021).

This background also serves as acknowledgement of the many influences and contributions to the method. It also provides background relevant for considering possible future directions for NOJ, particularly its potential for adoption outside the Berklee institutional context, where it has been developed for the past fourteen years.

Guitar accompaniment for traditional dance music

The author began developing the NOJ method in the late 1970s, when, after some years performing, he began teaching workshops on guitar accompaniment for traditional dance music in Celtic, American Southern Appalachian old-time, and related styles. For readers unfamiliar with these genres, the following description may be helpful.

Guitar accompaniment for traditional Irish music and related idioms is a specialized performance context, quite distinct from genres such as jazz, rock, or fusion addressed by many established guitar pedagogies. A common performance setting is an individual guitarist accompanying one or more performers on melody instruments (fiddle, flute, etc.), and/or a singer. In this context, there is generally no percussion or bass player: the guitarist serves both these musical roles. The most common instrument used is acoustic steel-string guitar, usually played with a flat-pick to provide steady rhythmic accompaniment with sufficient dynamics.

During the time the author was most active as an accompanist and teacher in these genres, contemporary players, particularly in Irish and related traditional genres, developed a fecundity of highly individual playing styles. Influential players such as Dáithí Sproule, Mícheál Ó Domhnaill, Alec Finn, and Paul Brady helped to kindle interest in accompanying Irish music in open tunings, especially DADGAD: using tunings and playing effects imitative of other instruments (bouzouki, banjo, bagpipes, percussion instruments), incorporating instruments and influences from other regional folk traditions (Balkan, Middle Eastern), and spurring innovations in instrument design leading to revived or new instruments such as the cittern, with varying numbers of strings, doubled courses, etc.

These varied musical influences and innovations led to a body of accompaniment techniques that included distinctive features, such as:

- ambiguous harmonies, drawing primarily on diatonic and modal harmonic vocabulary, with extensive use of chords without thirds, suspensions, etc.;
- use of varied open and semi-open tunings;
- moving triadic voicings, as well as more sparse dyads, played in association with open drone strings (below and above);
- contrapuntal moving bass and inner lines (generally moving slower than the melodic line);
- highly patterned right-hand flat-picking and strumming techniques, utilizing the resonance of open strings, unison/octave doublings etc., to create a seamless, flowing accompaniment texture.

Though a larger band setting may necessitate prior arrangements, the solo accompanist has considerable freedom to improvise, using these techniques to vary harmonic accompaniment over multiple repetitions of a tune in performance. This was characteristic of the author's trademark style as an accompanist: in fact, the sound of exploration and discovery, intrinsic to NOJ, was embedded in the progressions played in accompaniment of a tune.

This was the musical context for the author's initial workshops on guitar accompaniment. Yet, as a teacher, the author observed that many aspiring players, at beginning or even intermediate levels, lacked the knowledge or skills to find more interesting textures, such as moveable triadic voicings in DADGAD. Significantly, though many players wanted to learn to accompany traditional music in semi-open tunings

like DADGAD, few of these players had learned inversions of basic triad shapes in standard tuning. That limitation appeared to transfer to a restricted capacity to explore and experiment in DADGAD, much less other tunings. What seemed to be lacking, yet most difficult to teach, was the *shape sense* alluded to earlier in this article.

To address these issues, the author first developed simple charts of inversions of major triads in standard tuning – initially as a preparation for playing in DADGAD. Students reacted enthusiastically to these materials. A key lightbulb moment was seeing how simple triad shapes transformed as they moved across the anomalous third interval between the G and B strings (later termed *the Kink* in NOJ). This teaching experience led to the author's development of the more systematic shape-based approach to the guitar fingerboard which evolved into the Net of Jewels (NOJ).

Adaptation of NOJ to songwriting

In subsequent years, the author continued evolving the NOJ approach through workshops in settings at various guitar camps, including Puget Sound Guitar Workshop and California Coast Music Camp. The author later developed a series of six-week courses for the Passim School of Music, a local Cambridge-based community music school. Throughout this period, the author was doing his own homework: using exploration and discovery-based techniques to uncover more detailed shape relationships. At the same time, the author's songwriting was increasingly informed by discoveries made using an NOJ exploratory process.

Also during this period, the target demographic of the NOJ method gradually shifted – from a focus on traditional music accompaniment, to the much larger population of guitar players interested in both songwriting and advancing their guitar skills. In particular, the author encountered a population of amateur players at an intermediate level who experienced themselves as being stuck at a certain level or plateau of technical skill on guitar. Many of these players, particularly older adult players, responded well to the analytical, puzzle-solving flavor of NOJ shape-based insights and observed symmetries.

The NOJ approach proved well-suited to the needs and creative practices of songwriter/guitarists. Though few of these players are acquainted with or motivated to learn traditional accompaniment skills, there are striking commonalities in musical aspects. Many contemporary songwriters (other than those working stylistically in a jazz idiom) use a largely diatonic and/or modal harmonic palette. The musical texture of traditional accompaniment – a guitar accompanying a separate single instrumental melodic line – transfers well to that of a self-accompanying solo singer-songwriter. Perhaps more importantly, even for songs destined for a larger band arrangement, this texture also matches the experience of *writing* a song on guitar: composing a chord progression in an exploratory way, while vocalizing melody and lyrics.

The discovery-based aspect of the NOJ method also resonated for many songwriters. Songwriters writing on guitar, especially those who are largely self-taught, often employ distinctively exploratory creative work processes: discovering voicings, textures, and tunings in self-directed, intuitive, aleatoric, and sound-based rather than analytical ways, or moving shapes to random new positions on the fingerboard, letting the shapes interact with open strings. They often immediately fold musical fragments resulting from such discoveries into creative work; however, they rarely pivot from this mode of creative work into subsequent systematic exploration or harmonic interpretation. This insight helped the author clarify goals for adapting NOJ's progressive, shape-based pedagogy to the needs of songwriter/guitarists: to reconcile and integrate positive aspects of an intuitive, exploratory songwriter's approach with a balancing emphasis on theory, harmony, and song craft.

Evolution of NOJ at Berklee

In 2006, the author joined the Songwriting faculty at Berklee College of Music, in Boston. With this shift to teaching songwriting in a performing arts college environment, the author began to encounter a different demographic of young student songwriters. There was a greater range of technical levels in terms of guitar techniques as well as songwriting knowledge and experience. Nevertheless, the author observed that student songwriters writing on guitar – across diverse styles and genres, and at varying technical levels – experienced similar limitations in terms of approaching the guitar in a shape-based, exploratory way. With this motivation, the author began adapting NOJ to the needs of Berklee student songwriter/guitarists. (Once again, it is important to clarify that the author's continued development of the NOJ method at Berklee was under the auspices of the Songwriting Department, and is not a part of the Guitar Department curriculum.)

With its preeminent curriculum in the areas of both guitar performance and songwriting (described earlier in this article), Berklee was in many ways an ideal environment for evolving and refining an approach to guitar pedagogy tailored to the needs of songwriters. Yet it also presented challenges, given the organization of the college curriculum, and the extensive existing legacy of groundbreaking work on guitar pedagogy at the college. In this already densely developed educational environment, the author sought to incorporate NOJ's shape-based, exploratory pedagogy into songwriting-focused curriculum that would complement rather than duplicate or unduly overlap with existing courses.

Though not a Berklee-trained guitarist, and with the intent of creating a course targeted specifically to songwriters, the author nevertheless sought to reconcile aspects of the NOJ approach with terminology used in Berklee's guitar curriculum. Initially, this involved reviewing some externally-focused resources, such as selected publications by Berklee guitar faculty, and Berklee Online courses such as Guitar Chords 101 (Peckham, 2021). To be clear, the latter includes introductory-level materials, often used as pre-college preparation; guitar department curriculum or proficiency preparation materials for majors go to a depth and rigor beyond these resources. However, it was helpful to see different ways of presenting foundation concepts to students at technical levels typical of many self-taught songwriters. Also, though the planned scope of NOJ content would address only a subset of technical material within the scope of the Guitar core curriculum, it was still desirable to avoid presenting this material in inconsistent ways.

The author gained additional experience teaching selected Theory in Performance classes in Berklee's Five-Week Music Performance Intensive (now called Aspire) summer program: an innovative curriculum, targeted to pre-college (e.g., high school level) students, that integrates theory and harmony with instrument-specific technique. An important philosophy was gleaned from these experiences, salient to teaching guitar to songwriters, as distilled in the complementary maxims: You can't write what you can't play; but you're also more motivated to learn to play what you've written. These insights were key to adopting a pedagogical sequence and rhythm that interweaves creative, *compositional*/work at each stage of learning.

In 2007, the author had the privilege of working for a semester's faculty mentorship with emeritus faculty Mick Goodrick, a legendary player, teacher and author, whose work has deeply influenced Berklee's guitar curriculum, as well as countless master players. Sadly, Goodrick passed away in November 2022, while this article was still in revision (Small, 2022).

Berklee faculty mentorships are not equivalent to private study with faculty; they support faculty interchange to enrich the mentee's work in teaching and pedagogy. Nor was the author, though familiar with some of Goodrick's published work, a private student of Goodrick's – during this mentorship period, or afterward. Even so, not being a jazz guitarist in training or proficiency, the author was initially hesitant even to request the faculty mentorship. Fortunately, Goodrick, who believed his teaching materials to be genre-independent

(indeed, to some extent instrument-independent), proved receptive to having that work approached from the perspective of a songwriter and teacher of songwriting.

Many concepts and approaches the author encountered during this brief period of direct work with Goodrick, or through working with his published materials, have influenced the terminology and specific exercises in the NOJ pedagogy.²⁶ Goodrick's pervasive influence in this sense is not surprising: his work has been influential, not only in jazz, but for many genres and instruments. For example, in the bluegrass genre, banjo player Ron Block (personal communication, 26 October 2021) cites Mick's *The Advancing Guitarist* as a major inspiration, and also suggests that seminal guitar player Tony Rice was indirectly influenced, via his lessons with Goodrick's student John Carlini.

In this article, the author has acknowledged only a few of many touchpoints that reflect Goodrick's influence.²⁷ Beyond specific technical content, Goodrick's overall philosophy – of constrained creative work, technical mastery, some assembly-required teaching – has had a deep, clarifying impact on the author's approach to exploration and discovery embodied in NOJ.

Potential future development of NOJ

The NOJ method has now been taught for more than two decades, including for the past fourteen years as part of Berklee's songwriting curriculum. The author believes the method has the potential to contribute more widely to the field of guitar pedagogy and related research. This section briefly outlines a few possibilities for future evolution of the method, including more systematic evaluation, as well as potential extensions of scope and target student audiences.

- *Empirical assessment.* Over the years, many hundreds of students have experienced some portion of NOJ-based curriculum. During this time, the author has gathered primarily anecdotal feedback, e.g., from class surveys, student comments, etc. For example, many former students now active as professional songwriters and touring musicians have reported using songs based on NOJ exercises in their recorded and performed repertoire. While such informal feedback is gratifying, there has not yet been an opportunity for systematic assessment of the efficacy of the method: e.g., through formal student interviews, classroom observation, or other forms of empirical evaluation. Such efforts would require resources beyond those available for standard course evaluation in the Berklee environment, which are comparable to most college-level assessment protocols.
- *Documentation and archiving of materials.* The author has documented NOJ with a substantial archive of personal notebooks, as well as teaching materials shared with students²⁸. This article has presented only a few brief excerpts of these materials. These include 40-50 hand-written journals topically focused on NOJ; a primary book-length text; supplemental teaching handouts, textual and graphic resources and notational innovations; video and audio demonstrations of exercises and classroom sessions; faculty-composed etudes and compositions; student creative projects; documented student responses and experience reports; and ancillary materials, e.g., photographs of classroom whiteboard illustrations and collaborative exercises. In aggregate, they constitute, in effect, an informal auto-ethnographic record of NOJ's development. As such, they provide a potential resource for researchers interested in

²⁶ Many terms, concepts, and exercises which the author personally encountered from Goodrick's materials are now part of the shared institutional knowledge of Berklee's Guitar Department, and may have been derived from or influenced by multiple sources.

²⁷ While acknowledging this debt of influence, the author makes no claim of having received endorsement of NOJ, from Goodrick himself, or from other Berklee Guitar department faculty.

²⁸ Author's personal materials; reproductions/scans of selected materials can be made available upon request.

the development of pedagogical systems, even those closely associated with an individual developer. The author hopes to find opportunities to archive and preserve these materials and make them accessible.

- *Publication of the method.* A main obstacle to broader dissemination of NOJ currently is the absence of a commercially published version of the method. Such a publication presents a number of challenges, however. The current unpublished NOJ textbook shared with students is designed as a supplement to classroom teaching; that classroom experience in turn relies on the dynamics of a group class delivery, and a body of in-the-field teaching experience not yet distilled into formal teacher training materials. The many technical and creative assignments, etudes, and supplemental materials made available to students are not integrated into the main text. It is an open question how to turn the method in its current form into a book (or other publication format) that could be effectively worked through, either by individual learners through self-study, or through other teachers, in settings very different than the Berklee environment.
- *Notation and visualization.* This article has provided some rationale for distinctive aspects of NOJ notational conventions and innovations. These notations have evolved in a somewhat rough and ready way, working informally based on student feedback, but without opportunity for empirical assessment, especially with respect to accommodating different learning styles and preferences. Such assessment would be an important part of an overall evaluation of the method, and would also be essential to support publication of the method, which would involve commitments to particular notational choices.
- One difficulty in such assessment is that notational conventions used in different pedagogies may differ in subtle ways, which nonetheless may significantly impact the notation's effectiveness. In addition, notation has a private aspect: many teachers, and players as well, invent their own notations and annotation; in NOJ, such practices are explicitly encouraged. There has also been comparatively less attention paid to the role, and efficacy, of visualization and notations in support of the learning goals addressed by NOJ: e.g., supporting creative discovery to support composing and songwriting (in contrast to improvisation in a performative sense). One promising avenue to explore for such fine-grained assessment would be work on the psychology of notations in fields such as user-interface design, for example, the cognitive dimensions framework (Hadhrawi et al., 2017).
- *Extensions to other target student communities.* In its current form, NOJ has been taught mostly to high-school, college-age, or adult students with intermediate guitar skills. While the current NOJ-based courses at Berklee do not target beginning guitar players, it is promising to consider whether an NOJ approach would be applicable for earlier-stage players, including true beginners, as well as for younger students more generally. Yet it is by no means a given that the method would be appropriate for these profiles of students, or what modifications might be needed.
- *Extensions to other instruments.* Aspects of NOJ's shape-based approach can be, and almost certainly have been, applied to stringed instruments (fretted or not) besides guitar. It is beyond the scope of this paper to survey methods for instruments such as banjo (for example, Meredith, 2003), ukelele, or fiddle (for genres such as Appalachian/old-time or Scandinavian traditions that make extensive use of alternate or *scordatura* tunings, as well as genres such as bluegrass, swing, and jazz that emphasize improvisation). Yet the universal role of shape sense in mastery of these various instruments and styles suggests possibilities for shared, even generalizable teaching approaches to support these skills.
- *Pedagogical theory.* NOJ's shape-based, exploratory approach is a practitioner-based example of many concepts currently being explored by an interdisciplinary group of researchers, some cited throughout this article. It can offer counterexamples and correctives to keyboard-centric expositions of music theory, challenging the notion that harmonic relationships are fundamentally more opaque on the guitar fingerboard than on the piano keyboard. Beyond these instrument-specific aspects, NOJ reflects a broader insight: that musical and theoretical relationships can be compellingly and intuitively grasped

through visual, shape-based representations. That this insight is at all controversial is reminiscent of tensions in the field of mathematics between algebraic and geometrical approaches (Roberts, 2005).

Conclusion: Leading questions

Formal pedagogical systems, viewed as creative endeavors in their own right, reflect to varying degrees their developers' distinctive experiences, perspectives, and orientations. Some inherent influences and concerns may be known and explicit to those developers, some tacit and even difficult to discern; some emerge more clearly only through the activity of reflecting on the system in its entirety, just as such systems themselves may emerge initially through reflection on personal practice (Schon, 1984). Pedagogies may embody competencies as well as responses to limitations: perhaps we become, in effect, experts in the very types of problems with which we ourselves perennially contend.

In this regard NOJ no doubt reflects an approach to self-directed learning and creative work individual to the author (as method developer), and represents an attempt to formalize this approach and make it transferable. Given that a central gesture of this approach is one of exploration and inquiry, it is fitting to conclude this description by outlining some leading questions raised by the work.

At its heart, NOJ communicates a distinctive way of looking at the guitar, and especially the fingerboard: as a physical system, refined by generations of human instrument makers, that nevertheless embodies a conceptual, symbolic, and expressive space. One distinctive quality of this space might be called a *perturbed almost-symmetry*. In this view, the Kink becomes not an accidental but essential part of this system. The Jewels gives students focused jumping-in points into this space; the Net connects and integrates these small forms and localized discoveries. But the concept of the Kink provides a vital opportunity for creative disruption – a riddle to be solved.

Here the notion of "almost" is vital: a more chaotic system might frustrate the student through lack of requisite predictability; a more perfectly symmetrical system might not provide the necessary, generative encounter with anomaly. NOJ centers on and directs this encounter into an ongoing process of exploration and discovery, in support of multiple learning and creative goals: integrated advancement of harmonic knowledge and instrumental technique; inspiration, expression and innovation for songwriting and composing.

This provides a point of departure for a number of leading questions:

- How essential is this principle of perturbed asymmetry for these learning goals? Other aspects of guitaristic practice might also serve to advance these goals: for example, the productive tension between the geometrical formations and patterns on fingerboard and strings and the affordances and limitations of left (and right) hand. Or might other aspects of musical symmetry revealed by exploration might be more salient factors: e.g., the fractal self-similarities exhibited by interactions of shapes and harmonic qualities? (This aspect of self-similarity is referenced in the source metaphor for the method's name: the Net contains the jewels; yet each jewel is also said to reflect the entire Net within it.)
- Furthermore, perhaps this abstraction-seeking stance as a whole may be less appropriate for certain groups of learners or certain learning styles. As discussed earlier, some learners crave the foundation of learning specific repertoire; while NOJ could be augmented with examples, that would not change the fundamental quality of the method. Are there, perhaps, essential differences in motivation between those drawn to learning through repertoire vs. exploration, performance vs. songwriting and composing?

- Can NOJ be effectively adapted into a method for a beginning player's first introduction to the guitar? Or might the method prove best suited for its current target audience of early-intermediate players, especially those who have reached a self-acknowledged plateau in their advancement?
- Lastly: might there be an inherent paradox in a method advocating self-directed exploration, which is nonetheless decomposed into a tightly structured, sequential – in a word, directive – set of steps? Do all learners require this level of direction, or benefit from it? Might some thrive better simply by being thrown into the deep end of the swimming pool, and left to learn to swim on their own?

These questions do not, of course, negate the contributions of NOJ in its current form. It is the author's hope that the description offered in this article will provide a foundation for future work refining the method and disseminating it more broadly. For now, he is content to join the great George van Eps in kneeling and bowing to the east, thanking Lord Indra for the gift of the guitar: the great Net of Jewels, embodied and made manifest. (And the Kink - which keeps us human.)

Acknowledgements

The author extends his gratitude to all who have assisted in development of NOJ over the years. Many community-based organizations, including Puget Sound Guitar Workshop, California Coast Music Camp, Miles of Music Camp, and the Passim School of Music, provided venues for presenting early and evolving versions of the method. At Berklee, the author's semester faculty mentorship with Mick Goodrick was made possible with the support of Guitar Chair Emeritus Larry Baione. The Office of Faculty Development supported development of NOJ-based curriculum with a Faculty Fellowship grant (Simos, 2008). Songwriting Chairs Emeritus Jack Perricone and Bonnie Hayes supported inclusion of NOJ-based curriculum as part of the Songwriting major. Faculty colleagues Steven Kirby and George Woods have directly participated in evolving the NOJ teaching materials; other faculty colleagues have reviewed those materials, observed and even participated in classes. Guitar Chair Kim Perlak provided extensive review and comments on this article.

A special note of gratitude is owed to the late Mick Goodrick. Though his artistic work and pedagogical innovations may be best known in the context of jazz education, it is striking how adopting even a small subset of the vast musical possibilities of his materials has opened up distinctive new chordal, textural, and expressive resources for songwriters.

Finally, the many advancing student guitar players and songwriters who have encountered the NOJ method have made, and continue to make, lasting contributions to its evolution. Just as exposure to the NOJ pedagogy has hopefully enriched the creative practices of these Jewel-umni and Net-o-nauts, they have enriched NOJ through their initiative, creative work, reflective practice, and thoughtful feedback. Hopefully, this description of the evolution of the NOJ method can serve as a case study of the ways that pedagogies, like other forms of creative work, always arise in the context of collaboration and community.

References

- Bailey, J., & Driver, P. (1992). Spatio-motor thinking in playing folk blues guitar. *The World of Music*, 34(3), 57–71. <https://www.jstor.org/stable/43563264>
- Balistreri, D. (1995). *Intuition and fretboard intimacy: Approaching improvisation on the guitar*. [Master's Thesis, San José State University]. SJSU Scholar Works. <https://doi.org/10.31979/etd.axyg-7q78>

- Brandon, A. (2019). How the guitar shapes us, Part 2: The dual-notation environment. *Soundboard*, 45(2), 44–48.
- Brandon, A., & Westwood, D. (2019). How the guitar shapes us: Part 1. *Soundboard*, 45(1) 39–45.
- Brennan, J. (2021). *George Van Eps's harmonic mechanisms for guitar: Concepts and influence on jazz guitar education and performance practice* [Doctoral thesis, Technological University Dublin]. ARROW@TU Dublin. <https://doi.org/10.21427/CM8X-XA05>
- Buono, C. (2022). Embracing an anomaly: How to make the unique relationship between the G and B strings work for you. *Guitar Player Magazine*, 56(2), 78–83.
- Capuzzo, G. (2006). Pat Martino's *The Nature of the Guitar*: An intersection of jazz theory and Neo-Riemannian theory. *Music Theory Online*, 12(1). <https://mtosmt.org/issues/mto.06.12.1/mto.06.12.1.capuzzo.pdf>
- Christensen, T. (1992). The Spanish Baroque guitar and seventeenth-century triadic theory. *Journal of Music Theory*, 36(1), 1–42. <https://doi.org/10.2307/843908>
- Cox, P. (1978). *Classic guitar technique and its evolution as reflected in the method books ca. 1770–1850* [Unpublished doctoral thesis]. Indiana University.
- Crump, M., Logan, G., & Kimbrough, J. (2012). Keeping an eye on guitar skill: Visual representations of guitar chords. *Music Perception: An Interdisciplinary Journal*, 30(1), 37–47. <https://doi.org/10.1525/mp.2012.30.1.37>
- Damian, J. (2001). *The guitarist's guide to composing and improvising*. Berklee Press.
- Damian, J. (2007). *The chord factory: Build your own guitar chord dictionary*. Berklee Press.
- Danner, P. (2021). A noteworthy Early-American guitar treatise: James Ballard's *Elements* of 1838. *Soundboard Scholar*, 7(1). <https://digitalcommons.du.edu/sbs/vol7/iss1/9>
- De Souza, J. (2017). *Music at Hand: Instruments, Bodies, and Cognition*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780190271114.001.0001>
- De Souza, J. (2018). Fretboard transformations. *Journal of Music Theory*, 62(1), 1–38. <http://doi.org/10.1215/00222909-4450624>
- De Souza, J. (2021). Guitar thinking: Perspectives from music theory and cognitive science. *Soundboard Scholar*, 7, 1–23. <https://digitalcommons.du.edu/sbs/vol7/iss1/1>
- Dickert, L. (1994). *An analysis of Freddie Green's style and his importance in the history of jazz guitar* (Publication No. 9506755) [Doctoral thesis, University of Memphis]. ProQuest.
- Elmer, C. (2009). *Replacing patterns: Towards a revision of guitar fretboard pedagogy* [Master's thesis, University of Adelaide]. <https://hdl.handle.net/2440/63717>
- Finn, J. (1999). *Advanced modern rock guitar improvisation*. Mel Bay.
- Gambale, F. (2002) Modes: No more mystery [Video]. Available from <https://www.frankgambaleguitarschool.com/course?courseid=modes-no-more-mystery>
- Goodrick, M. (1987). *The advancing guitarist: Applying guitar concepts and techniques*. Hal Leonard.
- Goodrick, M. (2001). *The almanac of guitar voice leading volume one*. Liquid Harmony Publications.
- Goodrick, M. (2002). *The almanac of guitar voice leading volume two*. Liquid Harmony Publications.

- Goodrick, M. (2008). *The almanac of guitar voice leading volume three*. Liquid Harmony Publications.
- Goodrick, M., & Miller, T. (2012). *Creative chordal harmony for guitar: Using generic modality compression*. Berklee Press.
- Greene, T. (1971). *Chord chemistry*. Alfred Publishing.
- Greene, T. (1977). *Modern chord progressions: Jazz and classical voicings for guitar*. Alfred Publishing.
- Greene, T. (1981). George van Eps, 7-string maestro. *Guitar Player Magazine*, Aug 1981, 78-84.
- Guard, D. (1968). *Colour Guitar*. The author.
- Hadhrawi, M., Church, L. & Blackwell, A. (2017). A systematic literature review of Cognitive Dimensions. In *Proceedings of PPIG 2017: The 28th Annual Workshop of the Psychology of Programming Interest Group*.
https://www.cl.cam.ac.uk/~afb21/publications/A_Systematic_Literature_Review_of_Cognitive_Dimensions.pdf
- Honoré, C. (2005). *In praise of slowness: Challenging the cult of speed*. Harper Collins.
- Koozin, T. (2011). Guitar voicing in pop-rock music: A performance-based analytical approach. *Music Theory Online*, 17(3). www.mtosmt.org/issues/mto.11.17.3/mto.11.17.3.koozin.html
- Kordis, L. (2012). "Top speed and in all keys": Charlie Banacos's pedagogy of jazz improvisation [Doctoral thesis, New England Conservatory]. <https://www.academia.edu/16755337>
- Lang, E., & Berend, D. (1936), *Eddie Lang's fingerboard harmony for guitar*. Robbins.
- Law, A. (2015). *3rd Millenium Guitar: An Introduction to Perfect 4th Tuning*. Mel Bay.
- Leavitt, W. (1986a). *A modern method for guitar* (Vol. I). Berklee Press.
- Leavitt, W. (1986b). *A modern method for guitar* (Vol. II). Berklee Press.
- Leavitt, W. (1987). *A modern method for guitar* (Vol. III). Berklee Press.
- Marquez, E. (2000). *Incorporating Barney Kessel's methodology in jazz guitar instruction* (Publication No. EP05399) [Master's thesis, University of Texas, El Paso]. ProQuest.
- Matone, R. (2005). *An integral concept for jazz guitar improvisation* (Publication No. 1426258) [Master's thesis, California State University]. ProQuest.
- McFadden, J. (2010). *Fretboard harmony for university study: Method and historical context*. [Doctoral thesis, University of Toronto]. TSpace. <https://hdl.handle.net/1807/24825>
- McGill, T. (2013). Dennis Sandole's unique jazz pedagogy. *Current Research in Jazz*, 5.
<https://www.crj-online.org/v5/CRJ-DennisSandole.php>
- McLaughlin, J. (1982). *A visual process for deriving single note patterns from melody chord forms on the guitar* [Unpublished Master's thesis]. Duquesne University.
- McManus, T. (2015). *Ted Greene: Sound, time and unlimited possibility* [Master's thesis, Rutgers, The State University of New Jersey]. RUcore: Rutgers University Community Repository.
<https://doi.org/doi:10.7282/T3K64KX3>
- Meredith, S. (2003). *With a banjo on her knee: Gender, race, class, and the American classical banjo tradition, 1880–1915* [Doctoral thesis, Florida State University]. DigiNole: FSU's Digital Repository.
http://purl.flvc.org/fsu/fd/FSU_migr_etd-2480
- Miller, R. (1996). *Modal jazz composition and harmony: Volume I*. Advance Music.

- Miller, R. (1997). *Modal jazz composition and harmony: Volume II*. Advance Music.
- Noonan, J. (2008). *The Guitar in America: Victorian era to Jazz Age*. University Press of Mississippi.
- Okazaki, M. (2014). *Fundamentals of guitar*. Mel Bay.
- Peckham, R. (2021). Guitar Chords 101. Berklee Online course. Available from <https://online.berklee.edu/courses/guitar-chords-101>
- Phillips, K., Goldman, A., & Jackson, T. (2019). Hand shape familiarity affects guitarists' perception of sonic congruence. *Auditory Perception & Cognition*, 2(1–2), 82–97. <https://doi.org/10.1080/25742442.2019.1684164>
- Rehding, A. (2016). Instruments of Music Theory. *Music Theory Online*, 22. <http://mtosmt.org/issues/mto.16.22.4/mto.16.22.4.rehding.html>
- Roberts, H., & Hagberg, G. (1989). *The Praxis System guitar compendium: Technique, improvisation, musicianship, theory*. Advance Music.
- Roberts, S. (2005). *King of infinite space: Donald Coxeter, the man who saved geometry*. Walker Books.
- Rodgers, J. (2017). How to use chord grips to generate great soloing ideas. *Acoustic Guitar*, 294, 42–46.
- Rooksby, R. (2000). *How to write songs on guitar*. Backbeat Books.
- Rooksby, R. (2010). *How to write songs in altered guitar tunings*. Backbeat Books.
- Scott, A. (2003). "I see the fretboard in diagrams": An examination of the improvisatory style of Herbert Lawrence "Sonny" Greenwich. *Canadian University Music Review / Revue de musique des universités canadiennes*, 24(1), 62–78. <https://id.erudit.org/iderudit/1014671ar>
- Seamon, D. & Zajonc, A. (1998). *Goethe's way of science*. State University Press of New York Press.
- Schon, D. (1984) *The reflective practitioner: How professionals think in action*. Basic Books.
- Sievert, J. (1975). Blue Bear waltzes. *Guitar Player Magazine*, May, 21, 26, 30, 41. <https://www.castaliapub.com/wp-content/uploads/2017/12/Keith-Guitar-article-1.pdf>
- Simos, M. (2008). Faculty fellowship grant final report: Publication preparation of Net of Jewels materials. [Unpublished internal report, Berklee College of Music; available from the author].
- Simos, M. (2012). *The net of jewels*. [Unpublished teaching materials; available from author].
- Simos, M. (2014). *Songwriting strategies: A 360° approach*. Berklee Press.
- Solstad, S. (2015). *Strategies in jazz guitar improvisation* [Doctoral thesis, Norwegian Academy of Music]. NMH-Brage. <http://hdl.handle.net/11250/2358576>
- Stenstadvold, E. (2006). The evolution of guitar notation, 1750–1830. *Soundboard*, 31, 11–29.
- Swanson, E. (2017). *Harmonically speaking: George Van Eps and the Great American Songbook* [Doctoral thesis, University of Illinois, Urbana-Champaign]. IDEALS. <https://hdl.handle.net/2142/98889>
- Van der Sluis, H. (2020). Slow higher education. *New Vistas*, 6(1), 4–9. <https://doi.org/10.36828/newvistas.105>
- Van Eps, G. (1980). *Harmonic mechanisms for guitar volume one*. Mel Bay.
- Van Eps, G. (1981). *Harmonic mechanisms for guitar volume two*. Mel Bay.
- Van Eps, G. (1982). *Harmonic mechanisms for guitar volume three*. Mel Bay.

Warnock, M. (2008). *Johnny Smith: Melodic interpretation and improvisational techniques* [Doctoral Thesis, University of Illinois at Urbana-Champaign]. IDEALS. <https://hdl.handle.net/2142/85807>

Mark Simos, a professor in the Songwriting Department at Berklee College of Music, is an acclaimed songwriter, tune composer, guitarist, accompanist, teacher and author. More than 200 of Mark's songs and instrumentals have been recorded, by prominent artists, from influential roots and bluegrass musicians such as Alison Krauss and Union Station, Ricky Skaggs, Del McCoury, and Laurie Lewis, to Australian rock icon Jimmy Barnes. At Berklee, Mark has created innovative curriculum in process aspects of songwriting, documented in two books published by Berklee Press, *Songwriting Strategies: A 360° Approach* (2014), and *Songwriting in Practice: Notebooks, Journals, Logs, Lists* (2018), articles and book chapters. Besides creating two levels of Guitar Techniques for Songwriters courses, he has developed curriculum in the areas of experiential critique, songwriting collaboration, song and tune writing in roots styles, and songwriting and social change.

Email: msimos@berklee.edu