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To cite this article: Emily Payne (2022): Instrumental Interaction and Subversion in John Cage's *Concert for Piano and Orchestra*, *Contemporary Music Review*, DOI: [10.1080/07494467.2022.2080454](https://doi.org/10.1080/07494467.2022.2080454)

To link to this article: <https://doi.org/10.1080/07494467.2022.2080454>



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Published online: 27 Jun 2022.



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# Instrumental Interaction and Subversion in John Cage's *Concert for Piano and Orchestra*

Emily Payne 

*This article examines the dynamic nature of instrumental interaction in indeterminate music, using John Cage's Concert for Piano and Orchestra (1957–58) as a case study. Performing the Concert requires instruments to be dismantled, detuned, and destabilised, and within the parts themselves techniques are often stretched or combined to the point of complete breakdown. Drawing on interviews and observational studies undertaken with the experimental music ensemble Apartment House, I explore how the indeterminacies of the instrumental parts are enacted and negotiated in performance. The article suggests the ways in which indeterminacy is not an abstract compositional device, but is distributed across musicians, their instruments, and their environments. More broadly, it shows how a reading of indeterminacy through performance both underlines and complicates the relationships between individuals, objects, and the kinds of agency that are enacted and animated in creative work.*

*Keywords: John Cage; Indeterminacy; Instrumental Interaction; Performance; Technique*

John Cage's *Concert for Piano and Orchestra* (1957–58) has become emblematic of a particular approach to indeterminacy that characterises much of his music of the 1950s, with the notations of the piano part (also known as the *Solo for Piano*) becoming iconic representations of mid-century experimental music. Scholarly discussions of the piece have tended to focus on these graphic notations, with less attention given to the remaining—comparatively more conventional—thirteen instrumental parts and how they function in performance. Performing the *Concert* requires instruments to be dismantled, detuned, and destabilised, and within the parts themselves techniques are often stretched or combined to the point of complete breakdown. Using the *Concert* as a case study, I explore the dynamic nature of instrumental interaction

in indeterminate music. Drawing on interviews and observational studies undertaken with musicians from the ensemble Apartment House, I explore how the indeterminacies of the instrumental parts are enacted and negotiated in performance.<sup>1</sup> The article suggests the ways in which indeterminacy is not an abstract compositional device, but is distributed across musicians, their instruments, and their environments. More broadly, it shows how a reading of indeterminacy through performance both underlines and complicates the relationships between individuals, objects, and the kinds of agency that are enacted and animated in creative work.

### **Instrumental Interaction**

Making music of whatever style requires a combination of complex interactions between body and instrument, as musicians negotiate their musical knowledge and their embodied relationship to their instrument.<sup>2</sup> Technical expertise is gradually developed through repetition and rehearsal to reach and sustain a level of familiarity and control that it is thoroughly embodied, that is, it occurs without conscious attention. This gradual attunement is often characterised in terms of the instrument's taking on a progressively inconspicuous role within the process, such that the player reaches a point of technical facility whereby they can direct their attention away from the instrument and towards the activity itself. In Heidegger (2010 [1953]) terms, this shift in perceptual awareness is experienced as *Zuhandenheit* ('readiness-to-hand'), whereby the boundary between body and instrument dissolves. It is through its readiness-to-hand that an instrument is experienced in its function or effect. When this union breaks down, the instrument is experienced in its 'objective presence', or *Vorhandenheit* ('presence-at-hand'). Writing on cello performance, Tim Ingold characterises this phenomenon: 'The instrument is felt to be obdurate or resistant; it sticks' (Ingold 2011, 414). In an optimal performance situation the instrument recedes from the process, experienced, as Anthony Gritten describes it, as 'first, a tool through which [the performer] can exercise and embody her intentions with respect to her performance and, second, a prosthetic extension of her body' which rewards 'a particular kind of trained manipulation' (Gritten 2011, 189).<sup>3</sup> Performers' phenomenological accounts of becoming skilful in performance offer vivid descriptions of the transparency of the instrument that Gritten observes.<sup>4</sup> Echoing Merleau-Ponty's account of a skilled organist's 'comprehensive grasp of his instrument' (Merleau-Ponty 2002 [1962], 168), David Sudnow (1979) writes of the 'piano-knowing hand' that has a deep but continuously refined knowledge of the piano scale, in a way that goes beyond knowing how to move fingers. This knowledge becomes so engrained within the player's practice that it is impossible to unlearn (Henderson 2009). Within this framing, performance cognition and instrumental mediation are tightly intertwined: as Merleau-Ponty summarises, 'The distinction between subject and object is blurred in my body' (cited in Carman 1999, 206). Rather than passive objects that knowledge is applied to, instruments 'ground modes of music cognition that are embodied, technically conditioned, and historically

situated' (de Souza 2017, 26). They are generative, playing an active (if at times seemingly tacit) role in the creativity of music-making.

### Instrumental Interaction and Subversion

This body-instrument integration outlined above is neither fixed nor static; rather, it is transitory and subject to disruption—whether through accident or deliberate resistance. Instabilities bring presence-at-hand into sharp relief by drawing the player's attention to their tool in ways that might otherwise have been taken for granted. Temporary disruption leads the player to experience *Unzuhandenheit* ('unreadiness-to-hand'): whereby the instrument is still understood in terms of its referential totality (that is, in terms of its use), but it is unusable. Unusability can take different forms: if the instrument is damaged or breaks down during use (e.g. a string snaps) it becomes 'conspicuous', or 'improperly adapted for [its] specific use' (Heidegger 2010 [1953], 212). If the instrument is absent (e.g. a key of a piano is missing), it becomes 'obstructive'; the greater the need for a particular function, the more obstructive the instrument becomes. The third category of unusability is 'obstinacy': it is neither damaged nor absent, but hinders the activity at hand in some way and must be dealt with before the performer can continue.

The dynamic nature of disrupted instrumental interactions and their implications for music cognition has been closely examined by Jonathan de Souza (2017). He presents a series of case studies of three categories of modified instruments—retuning, preparation, and redesign—to explore the consequences of their conspicuousness for performance perception. In such circumstances, an instrument's affordances can 'frustrate expected connections between particular actions and particular sounds, [and thus] interrupt learned associations between hand and ear' (de Souza 2017, 84). Yet, rather than viewing these situations as instances of accident or error that require correction, de Souza considers their *generative* potentialities. In the case of retuned instruments (such as the tightening or slackening of a guitar string) the instrument's interface is retained but the relationship between the musician's action and the sonic outcome is disrupted, forcing the performer to readjust their motor habits and auditory expectations. Prepared instruments (whereby the instrument's mechanism is modified by the introduction of foreign objects) also retain their original interface but their means of sound production (and therefore their sonic affordances) are changed and in some cases rendered unpredictable, such that the instrument's sounds, not just its pitches, are changed. That is to say, through preparation an instrument is transformed into a new, or 'othered' instrument. De Souza suggests, for example, that the prepared piano used in Cage's *Sonatas and Interludes* (1946–48) retains its piano interface and its conventional mode of technique, but becomes a percussion instrument. In the case of Fred Frith's prepared guitar, the generation of new material from the altered instrument becomes a parameter with which to improvise.<sup>5</sup> The third category of altered instruments, those that have been redesigned, describes instruments that have had their interface changed in some way. Here de Souza

offers Pat Metheny's 42-string triple-necked Picasso guitar as an example of a radically redesigned interface, showing how the instrument's affordances separate the required action schemas that would usually be enmeshed, and offering an entirely new (and in many ways, instrument-specific) technique. Across all three categories, de Souza shows how musical instruments mediate performers' experiences; through the modification of instrumental design, musicians' habits and expectations can be shifted in unexpected—and often creative—ways.

It is important to note, and as de Souza points out, instrumental mediation is not an ahistorical process. The notion of an instrument's function and the ways in which it conditions experience (both for the performer and the listener) is culturally negotiated, inflected by its aesthetic context (de Souza 2017, 106). Instruments can be understood in terms of their habitus, as Paul Théberge has shown in his comparison of the violin and the fiddle (Théberge 1997; 2017). Moreover, they are more than just functional tools; they are sensory, aesthetic objects (de Souza 2017, 106; Levinas 1969, 133) that come with cultural baggage which shapes performers' relationships to them—established pedagogies, practices, and bodily relationships, associations with players and performance contexts—which animate a particular performance tradition and body of repertoire (Wilson 2013).<sup>6</sup> Mira Benjamin makes precisely this point in considering the extent to which instrumental practices (in her case experimental string intonation and microtonality) might be considered 'new' or 'experimental', arguing for the need to 'clarify how and through what means what is being called "new" connects to existing practice—connections which are most readily observable in lines of technique which run unbroken beneath shifting conventions of performance and musicality' (Benjamin 2019, 111). That is to say, the (un)familiarity of an extended technique is not universal, but is conditioned by the performer's own experience, including their aesthetic position. There is a distinction to be made between, on the one hand, disruption being viewed as a resistance to be encountered and then practised until the performer reaches such a level of expertise that the bodily action is ingrained within their practice and they can employ strategies such that it becomes a controllable and reproducible technique like any other. On the other hand, disruption can be interpreted as a practice to be 'performed' in its inherent instability (that is, the performer accepts, or even pursues, radical contingency in performance outcomes).<sup>7</sup> This distinction has implications for how performers understand and respond to indeterminate performance conditions. The extent to which these ideologies relate to the actual experiences of musicians working within the practical constraints of performance is the focus of the following case study.

### **Instrumental Interaction and Subversion in the *Concert for Piano and Orchestra***

One of Cage's primary compositional concerns that is evident in much of his music from the 1950s onwards, including the *Concert*, was the exploration of indeterminacy, understood, as he put it, as

composition which is indeterminate with respect to its performance. That composition is necessarily experimental. An experimental action is one the outcome of which is not foreseen. (Cage 1961[1958], 39)

The performance materials of the *Concert* comprise the *Solo for Piano*, which combines 84 notations spread across 63 large loose-leaf pages, thirteen instrumental parts, and a part for conductor. As well as Cage's innovation in the *Solo for Piano* notations—some relatively straightforward, others strikingly complex and/or ambiguous—the formal structure of the piece invites various approaches to performance.<sup>8</sup> Each of the thirteen orchestral musicians plays from a separate part (without a master score), and, working within a predetermined length of time, can choose to play any number of pages of their part (including none). Moreover, the *Concert's* formal instructions state that the parts themselves can be played in any combination, including with other pieces, offering seemingly endless performance possibilities.<sup>9</sup> The performance conditions are further complicated by an optional part for conductor, who performs the role of a 'human clock', working from a series of timings to change 'clock time to effective time', that is, to manipulate the speed of the performance in unexpected ways.<sup>10</sup>

The instrumental parts (or 'solos') are less elaborate and abstract than the *Solo for Piano*. However, many of them were strikingly innovative for their time, both in terms of the quantity of sounds that they explore and their advancement of extended instrumental techniques. Each part consists of a page of instructions followed by either twelve or (in the case of the stringed instruments) sixteen pages, with five systems (or staves) of unspecified duration per page. All sounds are indicated using either a small, medium, or large note head. Cage's instructions state that these three sizes determine either the amplitude or the duration of a particular pitch (that is, a small note head can be of either a quiet dynamic, short duration, or both, and so on). No direction is provided for how to decide upon the placement of notes across a system. However, in the programme notes for the *Concert's* premiere Cage suggested that horizontal space should be read as directly proportional to time (Cage and Kostelanetz 2000, 57).

While all of the solos follow generally similar principles, there are some subtle differences between them. For example, the strings are the only parts to include the instruction that pages cannot be repeated; they are also unique in omitting the suggestion that 'additional silences' may be included in a performance. The parts vary further in their complexity. The *Solo for Bassoon and Baryton [sic] Saxophone*—later dismissed by Cage as 'quite uninteresting' (Cage 1970)<sup>11</sup>—and the string parts—similarly described as 'mediocre' (Cage 1974)<sup>12</sup>—are among the sparsest in terms of the number of sounds on a page. By contrast, the *Solo for Sliding Trombone* is the richest and most theatrical part in terms of the techniques that Cage asks for; the *Solo for Clarinet* is similarly one of the busiest and most specific in its wide range of unusual sounds, including (among others) flutter tongue, fingernail on reed, mouth-piece sounds, use of upper or lower half of the instrument with mouthpiece,<sup>13</sup>

singing/gargling, apart from or into the instrument, and various fingering and key configurations. As can be seen in an excerpt from the clarinet part (Figure 1) often several parameters are layered within a single sounding ‘event’.

To take a single example of the parametric complexity of the combined events, on the first page (121) the fifth note of the first system is a small note head A#6, with a *diminuendo* or *crescendo*, pitch bend, slap-tongued, with side keys 1, 2, and 3 depressed. Elsewhere the part is sometimes less dense, with only two events on page 128, for instance. It is the layering of different techniques within a single event that is one of the fundamental characteristics of the *Concert*'s indeterminacy (Iddon and Thomas 2020, 310), and which is only revealed through performance.

Matters are complicated further when a conductor is involved in the performance, since the resultant temporal unpredictability necessarily undermines (whether gently or more radically) the control that players might have developed. Changes in speed might affect the rate at which players have to move through or stretch out their events, as well as the overall density of a realisation.<sup>14</sup> These conditions mean that different layers of indeterminacy operate simultaneously during a single performance. What are the consequences of these circumstances for instrumental interaction? Instrumental control in the context of the Cage's music is less an exploration of the relationship between instrument, instrumentalist, and instrumental idiom, than it is a break with previous traditions to uncover new sonic territories, while resisting subjectivity and self-expression. This way of thinking is suggested in Cage's view on tuning as ‘another form of government’ (Kostelantez 2003 [1987], 97). Elsewhere Cage has stated: ‘I don't try to make the situation between what is musical and not musical more refined [...] but I start from the other direction, from noise, and don't use sounds that don't do honor to noise’ (Kostelantez 2003 [1987], 97). This approach to performing experimental music has been characterised by Philip Thomas (2009) as one which emphasises actions within the moment of performance.

### Case Study: Apartment House

The following discussion examines the ways in which the instrumental parts of the *Concert* set up conditions which offer insights into the body-instrument relationship that go far beyond simply sonic outcomes. First, through an examination of an extended technique that subverts conventional instrumental interaction in various ways, the string *scordatura*, before moving on to explore the ways in which performers respond to the combinations of techniques and the consequential disruption of their embodied relationships to their instruments.<sup>15</sup> The case study material is taken from a performance by Apartment House conducted by Jack Sheen with Philip Thomas playing the piano part, which took place on 1 July 2017 at the University of Leeds and resulted in a CD recording (Apartment House 2017). A rehearsal on the day of the performance and the performance itself were filmed.<sup>16</sup> Semi-structured interviews were undertaken with the musicians throughout the project, both before and after the performance.<sup>17</sup>

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The image shows a handwritten musical score for Clarinet on five staves. The notation includes notes, rests, and various performance instructions. The instructions are as follows:

- SLAP
- MOUTHPIECE ALONE OPEN AND NOTED
- MOUTHPIECE + EXTENSION (OPEN)
- REGISTER KEY WITHOUT TUMBHOLE
- LOWER  $\frac{1}{2}$
- R. KEY WITHOUT DE HOLE
- TPT. EMBOUCHURE WITHOUT MOUTHPIECE
- MOUTHPIECE ALONE OPEN - MUTED
- HIGH SQUEEK
- FINGER MOD. T NO LIP
- SING OR GARGLE
- MOUTHPIECE + EXTENSION OPEN AND MUTED

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Figure 1 John Cage: *Concert for Piano, Solo for Clarinet* (p. 121) Edition Peters No. 6705-CL © 1960 by Henmar Press Inc. New York. Reproduced by kind permission of Peters Edition Limited, London.



*Scordatura*

One of the most striking aspects of the string solos is their use of different *scordatura*, an archetype of string performance practice.<sup>18</sup> The effect is indicated by a thick bar line combined with either a sharp or flat sign aligned to a specific string to indicate an increase or decrease ‘of any amount of tension’; or a natural sign to signify ‘a return to normal (approx.) tension’. The microtonal ambiguity permitted here (itself perhaps an acknowledgment of the challenge of adjusting the tuning quite quickly in a performance) means that the instrument is likely to become progressively detuned as the strings are tightened and loosened throughout the performance.<sup>19</sup> The way in which it is applied throughout the parts is carefully considered, which suggests that the pages should be read in sequence: if a string is sharpened, it is only ever flattened subsequently.<sup>20</sup> In this way, there is an inherent coherence in the way it is applied within the parts that respects the physical limitations of the instrument.

Beyond modifying the immediate physical and acoustic relationships between the musician and instrument, *scordatura* exposes dimensions of stringed instrumentality. In de Souza’s framing, retuning an instrument through the tightening or slackening of a string retains the instrument’s interface, but the relationship between the musician’s action and the sonic outcome is disrupted (the player’s fingerings do not represent the pitches as heard), misaligning the performer’s motor habits and auditory expectations. String players present something of an exception to de Souza’s argument, however, since (with experience) they are accustomed to the continuous adjustment and retuning of fingers by ear. This means that there is an inherent indeterminacy or flux constantly at play in string intonation. Nevertheless, in the context of the *Concert*, the disruption is compounded by the fact that other instruments within the ensemble, most obviously the piano, will remain in tune, a tendency acknowledged in a group interview conducted with some of the Apartment House string players before the performance:

RE Well, [*scordatura*] quite rapidly disorientates the pitch. Since we’re playing with the piano.

HS [Cage is] disorientating us, isn’t he? [...] So you have to inhibit your initial reaction and do something completely contrary. So he’s already pushing us off the edge.<sup>21</sup>

While the consequences of *scordatura* might appear to be primarily pitch-related, there are other ramifications which might require an adjustment of bow position, angle, pressure, or speed, while increasing the care that is needed when bowing due to the increased contingency of the situation. Retuning can alter and separate the different bodily schemas required to make a sound—subtly, or in quite radically different ways. That is to say, changes in pitch are not just about changes in position of the fingers. *Scordatura* also affects the instrument’s overall sonority and resonance, as the untempered strings change the instrument’s acoustics, resulting in a more varied array of different sonorities and harmonic possibilities than could be achieved in a diatonic setup. As violist Bridget Carey put it, ‘[*Scordatura*] doesn’t just affect the

note that you're playing at the time; it affects the whole surround of the sound', including auxiliary sounds such as percussive sounds on the instrument's body.<sup>22</sup> Reiad Chibah agreed, commenting on how his viola's overtones become 'stranger and more unusual' the more the instrument is detuned.<sup>23</sup>

The above comments are suggestive of the inherent fragility and indeterminacy of stringed instruments. Any instance of chance in one parameter has consequences for others, evidencing the potential for *scordatura* to destabilise the instrument's infrastructure. The changes in string tension can impact on the bridge or the sound post, causing other strings to slip, or in extreme cases, slacken to the point that the string sits on the fingerboard, or tighten so much that it snaps. There are also consequences for the player's bodily schemas, with even minor shifts in tuning requiring concomitant shifts in bow pressure or speed. These circumstances present a potential tension for performers between the techniques required by the piece and the foundational aspects of their craft. Indeed, several of the performers were concerned about damaging their instruments. Employing language that anthropomorphises her violin, Hilary Sturt commented that 'our instruments are actually very delicately set up and they don't terribly like *scordatura*. I have a different violin that I use if it's extreme, because of the tension. Nothing is fixed in stone here [...]. So we're a little bit wary of that'.<sup>24</sup> Similarly, double bassist Jonathan Heilbron discussed his experiences of *scordatura* using emotive language, stating: 'I'm a little bit traumatised by past string breakings and things like that, especially the low strings from tuning them too high'.<sup>25</sup> Caution about the physical instability of the technique meant that most musicians tuned their strings using only incremental changes, with violinist Ruth Ehrlich summing up: 'I'm doing what I can do and feel I can control'.<sup>26</sup> Cellist Anton Lukoszevics, while also concerned with control, was the only player to describe varying the extremity of tuning adjustment based on the speed of his playing and the number of events happening at that moment in time.<sup>27</sup> These comments illustrate the point that musical instruments are sensory objects that are valued for more than just their technological function.

*Scordatura* is not usually employed as a standalone technique in itself (although the *Concert* is something of an exception to conventional practice, as is explained below); it provides a new instrumental environment within which other techniques are situated. While there is no indication in Cage's instructions as to whether the player should treat the indicated pitches with *scordatura* applied as being prescriptive (i.e. describing actions) or descriptive (describing pitches) in function—a tendency complicated by the implication that the *scordatura* modification is microtonal rather than diatonic—it is likely that it is the former function that is required here, since otherwise the device would be somewhat redundant.<sup>28</sup> All of the Apartment House string players read the notation as relating to fingering position, rather than sounding pitch, and simply accepted the resultant sounds. For some musicians this led to disorientation, for example, violinist Aisha Orazbayeva described how her sense of intonation deteriorated throughout the performance:

You really lose track and in the middle of the piece you really don't know what's going on with the tuning. I think at one point I had to play an open string and it was just not what I expected at all! And I was trying to look back to see how I detuned it and when I detuned it and what I detuned it by!<sup>29</sup>

In contrast to Orazbayeva, Lukoszevics reported that the changes in pitch brought about by *scordatura* did not impact his auditory expectations significantly. For him, this was due to his understanding of the aesthetics of the piece and its associated gestures:

[The *scordatura*] doesn't actually affect me. I could imagine that playing more conventional music, it would affect you because if you're playing a scale or something maybe you feel disorientation, but in the case of Cage's [*Solo for Cello*] I don't feel any disorientation.<sup>30</sup>

Hilary Sturt expressed a similar view, commenting that once *scordatura* has been applied, 'unless it's *glissando* you can't change the pitch so you're just dealing with what comes out. So [the sound] is definitely a non-pitched item by the time you get going'.<sup>31</sup> Her assertion supports the idea that musicians' auditory expectations can readjust rapidly to changes in pitch-to-place mapping (de Souza 2017); however, there is a point at which this protension 'switches' and what was previously a detuned pitch is transformed into the category of an inharmonic sound. This suggests that *scordatura* in the context of the *Concert* shifts the performer's relationship with their instrument, transforming it into the category of an entirely new instrument. In this sense it creates another sort of indeterminacy, whereby players must switch off their instinct to retune by ear.<sup>32</sup>

Beyond being a tool to generate an unstable environment, *scordatura* has a long history,<sup>33</sup> and has taken on an almost mythical status in string performance practice.<sup>34</sup> This is not to say that Cage's use of *scordatura* in the *Concert* represents a conscious engagement with the instrument's history; however, from the perspective of the performer, the tacit knowledge involved in employing the technique will inevitably draw on their own experiences and training, informed by instrumental pedagogy, and therefore convention and tradition. The first *scordatura* instruction in every string part notwithstanding, the *Concert* was radical for its time in requiring *scordatura* adjustments to be made during the actual performance event, since they usually occur as an ancillary performance procedure that takes place offstage (see also Fitch and Heyde 2007).

Not only does *scordatura* have sonic implications then, Cage's use of it in the *Concert* subverts the conventions of string performance practice. The ways in which the musicians responded to this aspect of the piece is revealing of their own performance aesthetics and training. Indeed, Heilbron's observation that his minor adjustments to the string tension might be inaudible in their results, but that he viewed the *scordatura* as 'just a visual thing',<sup>35</sup> seems to emphasise the theatricality of the gesture. While apparently content to adjust the pegs of her violin during

performance, and despite Cage's instructions permitting an approximate adjustment of string tension, Orazbayeva was concerned with tuning accuracy when she encountered 'naturalised' *scordatura*, commenting: 'it's quite hard because you don't know whether it's OK to check [the tuning] or not during the piece. I was doing a little [lightly plucks strings] to check whether it was back to normal'.<sup>36</sup> Orazbayeva's questioning of the extent to which the correction of tuning was permissible during performance speaks to the 'rules' of her musicianship in this performance situation.

Alongside the responses from the performers, there are some instances of *scordatura* that hint at it being employed as a theatrical gesture in its own right, a move that Björn Heile, writing on the music of Berio and Kagel, describes as 'metaxis' or a 'doubleness' of performance gestures 'masquerading as performance elements when they're clearly something else' (Heile 2019, 292).<sup>37</sup> For example, on page 98 of the *Solo for Cello*, the *scordatura* instructs the player to sharpen the C string and naturalise the A string (having been previously sharpened on page 96). This notation is followed by three pages that are almost entirely empty apart from a *pizzicato* C4 (page 98, system 3) which would usually be played on the A string, and a note below the staff (page 99, system 1) which indicates a sound to be played on the body of the instrument or using auxiliary means. In this example, the sharpening of the C string is perfunctory if viewed solely as a device that affects pitch. Similarly, in the *Solo for Violin 3* the player is instructed to sharpen the G string on system 3 of page 40, yet it is unlikely that this string will be needed until several pages later (for the B♭3 on system 1 of page 43).<sup>38</sup>

Aside from the technique's performative quality, the turning of the tuning pegs also results in transitional noise. Some players chose to embrace this sound, with violinist Hilary Sturt describing it as 'this nice sort of cracking sound', while at the same time commenting: 'a cracking peg isn't a great sign for an instrument'.<sup>39</sup> Other performers chose to adjust the tuning using the fine tuners on the instrument's tailpiece rather than the pegs, because the former affords adjustments of smaller increments as well as greater stability than the latter. As Lukoszevieve reflected:

I have much more control, and this piece is really about control: controlling what I have to do and execute on the instrument sonically. So I use the fine adjusters. And also it's quite quick, it doesn't take very long.<sup>40</sup>

A concern with instrumental control in these conditions was a priority for several players in order to realise the actions that are specified in the score, but without necessarily a concern for expressing a certain sound quality.

There are therefore a number of interrelated dimensions that are brought into play through the use of *scordatura* in the string parts that go beyond the generation of unstable pitches, and which complicate the notion of a 'retuned' instrument. Retuning stringed instruments results in a more complex conditioning of experience than that of the modified guitars that are presented in de Souza's case studies, since a stringed instrument has a more complex interface and associated schemas than a

guitar. Playing a guitar usually requires a single action of plucking or strumming a string to produce a sound combined with a particular configuration of fingers on the fretboard; stringed instruments require a combination of single and continuous actions (such as bowing) alongside finger configurations on the fingerboard. In these circumstances the fingers' touch and feel are equally as important as their physical position. The physicality of the instrument is important, too. String *scordatura* has the potential to radically undermine the stability of the instrument's structure and change its resonance, essentially moving it into a new instrumental category. The changes in tuning might result in disruptions to the performer's sense of intonation, however, as the interviews with the musicians show, this disorientation was not experienced universally; it was inflected by their instrumental habitus, and the extent to which the technique corresponded to their own performance practice.

### *Combining Techniques*

As discussed above, while the *Concert* presents a catalogue of different individual instrumental techniques that destabilise the body-instrument relationship, it is the combination of these techniques within a single 'event' that gives the piece its distinctive character. Often one technique impacts, or overshadows another, or combines with others to create unpredictable and unstable results. This means that in performance, musicians might be forced to choose between various possible options that are offered in these situations, and/or decide which parameters to prioritise in order to execute the required actions, if indeed the required actions are at all possible. What's more, the options available to each performer are likely to be impacted and in some cases constrained by the temporal indeterminacy of the live performance situation (Iddon and Thomas 2020, 98; Payne 2021). The complexity of the combined techniques notwithstanding, and as touched on above, the fluctuations in pace brought about by the conductor's part (if a conductor is involved in the performance) mean that, on a sudden increase in speed, some events might have to be executed rapidly or abandoned entirely; a sudden deceleration might necessitate holding an event for much longer than originally anticipated. Events might interrupt, collide, or overlap with one another in unexpected ways, unsettling previously familiar gestures, or in some cases resulting in complete failure.

Each of the instrumental parts includes instances of complex compound techniques. On system 2 of page 121 of the clarinet part, the clarinettist is instructed to play a tongued tremolo within an indicated range of approximately E3–G3 and F3–B3, in combination with an ascending pitch bend and either a *crescendo* or *diminuendo*. The tremolo is fairly straightforward to produce when used between two stable pitch ranges, but when combined with microtonal fluctuation, the performer must decide whether to slide between one or both of the pitches. The difficulty of sliding between both pitches can result in a break in the sound,<sup>41</sup> creating a new, unstable sound. Wright described her approach as 'making compromises': 'what I

chose to do was I could get a *gliss* going on the bottom note but not the top note at the same time. I didn't find a solution, so it's the bottom note that rises. That's the best I could do'.<sup>42</sup> In the bassoon and baritone saxophone part, the air tone and lip mute effects are combined (e.g. page 154, system 1) on a Bb3 (for saxophone) with a slow triple-tongue, and either a *crescendo* or *diminuendo*. Christian Forshaw viewed this event as leading to a 'failure of the note', commenting 'at this point you have to question whether it's actually possible'. For Forshaw, it was not a priority to find a way to perform a specific sound ideal, reflecting that 'I think the beauty of that is the struggle to get there'.<sup>43</sup>

This question of how to respond to the demands of compound techniques was commented upon in detail by trumpeter Jonathan Impett, in discussing combinations of non-standard valve configurations and playing with the water key open.<sup>44</sup>

So the question is then for the performer, do you stabilise the thing? Do you learn an entire new instrument, that is, how to play the trumpet with the spit valve open on every chromatic note on five different instruments? That's a possibility. Do you allow it to do what it does if you simply play in your normal manner and open the spit valve which may be very unstable and take a moment to find a more stable state? What you can do is constantly correct as the instrument wants to go somewhere else. Those are the possibilities.

So if Cage gives us this note [plays] with those two effects combined, what are we going to do, especially if it's a quiet one? Are we going to allow it to do what it wants to do? Are we going to practise so hard that it can't go wrong? Or are you going to find another alternative that approximates the sound that you might get if for some bizarre acoustic reason that happened to work on the particular instrument you happened to be playing at that particular moment? [...] So my particular solution was to expose the problem, that is, to allow the sound to do what it would prefer to do, which is misbehave, and then attempt to play the note that Cage asks for.<sup>45</sup>

Like Sturt's comment about her violin's response to *scordatura*, here Impett ascribes agency to his instrument and to the sound itself. As he puts it, 'the instrument wants to go somewhere else', and the sound would 'prefer' to 'misbehave'. In disrupting his embodied relationship to his instrument, the instability of the technique distances him from his trumpet, which takes on a heightened agentic role. Impett, like Forshaw, treated these instances as performative moments in themselves, rather than emphasising control of the sonic outcome. The players' different responses to the disruption of combined techniques underlines the many ways in which their decisions are inflected by their personal experiences, training, and knowledge of the experimental music tradition. They also hint at the everyday nature of music-making, the need to 'get a job done' within the practical constraints of a performance situation.

While this is a case study of a single performance project, the ways in which the Apartment House musicians responded to the instrumental subversion presented by Cage's notation exposes just some of the variety of factors that influenced the musicians' perceptions and actions. While largely focusing on an individual, isolated

technique, my discussion nonetheless shows how retuning has powerful performative consequences that go far beyond the adjustment of pitches. This kind of disruption is evident in many of the other instrumental parts, from the various dismantlings of the *Solo for Sliding Trombone*, to the ‘boat whistle’ multiphonics of the *Solo for Clarinet*, or to the choice of mutes in the brass parts, but the *scordatura* demonstrates these tendencies particularly vividly. However, isolating single techniques only tells a partial story; it is the *Concert*’s characteristic combinations of techniques that fully operationalise its indeterminacy, as performers make decisions about how to negotiate the complexities of the sounds and the temporal instabilities to realise the piece in performance.

### Conclusions

The dynamic body-instrument relationship is a universal of musical performance. However, the indeterminacy that is enacted in Cage’s *Concert* demonstrates its presence particularly acutely, as musicians’ intimate and familiar relationships with their instruments are disrupted and subverted. This is not ‘voluntary self-sabotage’ (de Souza 2017, 83; emphasis added); it is imposed externally rather than growing out of a player’s existing working practice, exposing the gaps between sound and action in a way that invites the performer to step outside of their usual way of working. Furthermore, the discussions with the musicians illustrate that performance expertise is about more than developing embodied knowledge of particular techniques; it also comes with associated notions of phrasing, line, and so on, which condition the decisions they make, either tacitly, or more explicitly (as Impett’s comments illustrate). Indeed, it is arguable that a performer of the *Concert* is likely to be conservatoire trained, and their relationship with their instruments is inevitably inflected by a particular understanding of instrumental idiom and gesture. The *Concert* therefore subverts more than the performer’s physical relationship to their instrument; it breaks apart the purposes and functions that condition instrument use, a move that is arguably even more radical than disrupting conventional techniques. Indeterminacy in the context of the *Concert*, then, lays bare the underlying gaps and divisions within musical performance that might otherwise remain invisible: between the parametric components of sounds, the bodily schemas of performing particular techniques (or combinations thereof), and the individual instrumental parts that would usually coalesce within a shared temporality.

All this is to say that understanding indeterminacy in terms of, but ultimately beyond, its underlying physicality can offer new insights into how the music functions in practice. Such an approach shows how the *Concert*’s indeterminacies are not simply ‘written into’ the score. Rather, they are contingent on factors including the musicians’ embodied knowledge of their instruments, their material engagements with their parts, their attitudes towards Cage’s music, as well as the practical constraints of realising the piece in performance. Looking beyond the *Concert*, Cage’s later works evidence an expansion, in different directions, of some of the approaches to



instrumental mediation it presents. More elaborate instrumental interactions and events are presented in the notations of *Atlas Eclipticalis* (1961–62), characterised by Benjamin Piekut as a ‘complex struggle over agency’ (2011, 45), with this piece foreshadowing some of the extreme technical demands of the sets of etudes composed in the 1970s. *Variations II* (1961), itself based on notations found in the *Solo for Piano*, goes a step further in stretching the relationship between notation and prescribed actions, advancing indeterminacy’s disavowal of specificity of outcome (see Iddon 2013; Nakai 2022). *Child of Tree* (1975) and *Branches* (1976), described by Cage as ‘music of contingency’ (Cope 1980, 21), explore indeterminacy through the use of plant materials as sounding objects, the use of non-instruments here presenting a more radical engagement with instrumental (un)usability (see McLaughlin 2022 in this special issue).<sup>46</sup> To read indeterminacy in its many manifestations *through* performance is to analyse it in ways appropriate to its particular modalities. Such an approach is necessary to uncover indeterminacy’s various innovations, potentialities, contradictions, and limitations, and so to broaden understandings of a music that until recently has remained at the margins of performance studies. For its part, indeterminate music has the potential to bring new perspectives to discussions of instrumental interaction, or the ways in which instruments in musicians’ hands afford action and meaning.

### Acknowledgements

I wish to thank the musicians of Apartment House for their participation in the project, and to Angela Guyton for creating the films for the project. I am grateful to Laura Kuhn of the John Cage Trust for the use of Cage’s unpublished correspondence. Finally, thanks are due to Laura Anderson, Martin Iddon, Scott McLaughlin, Jonathan de Souza, Philip Thomas, and Oliver Thurley for their helpful comments on earlier versions of this text.

### Disclosure Statement

No potential conflict of interest was reported by the author(s).

### Funding

This research was supported by the Arts and Humanities Research Council (Project Reference: AH/M008444/1). The project team’s archival research at Northwestern University Library’s John Cage Collection was funded by a John Cage Research Grant.

### Notes on Contributor

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## Notes

- [1] This article is an output of the AHRC project, ‘John Cage and the *Concert for Piano and Orchestra*’, led by Philip Thomas and Martin Iddon, and based at the Universities of Huddersfield and Leeds (Project Reference: AH/M008444/1). The main project findings are published in Iddon and Thomas (2020) and on the project website: <https://cageconcert.org>.
- [2] The complex ways in which musicians perform and interact with their instrument has been a well-established theme in ethnomusicology for decades. See, e.g. Baily (2006), Blacking (1977), Clayton and Leante (2013), and Dawe (2012 [2003]).
- [3] In Heideggerian terms a tool is understood relationally, situated within a network of purposes and functions, ‘as an agent thoroughly deployed in reality, as an *impact* irreducible to any list of properties that might be tabulated by an observer’ (Harman 2002, 21). That is to say, a violin is understood through playing rather than through abstract observation of its materials.
- [4] Although the notion of a tool becoming wholly transparent has been critiqued. See Cappuccio and Wheeler (2010); Harman (2002).
- [5] These circumstances are suggestive of a comment by Peter Yates about performing the *Sonatas and Interludes*: ‘Just to improvise, to make sound on a piano prepared by John Cage is an enchanting experience’ (cited in Iddon 2019, 50). Yates expanded on this view in an article published around six months later, which describes, in vibrant and compelling prose, the experiences of performing and listening to the *Sonatas* (see Iddon 2019, 55–58). I am grateful to Martin Iddon this observation.
- [6] Elizabeth le Guin illustrates this point particularly vividly in her account of the embodied engagement of her ‘cellist-body’ with the music of Boccherini, which forges an empathy with the composer which is physical to the point of carnal (le Guin 2006, 25).
- [7] The role that the performer’s aesthetic position plays in conditioning technical familiarity is not addressed in de Souza’s discussion. In light of this, his invocation of Helmut Lachenmann’s *musique concrète instrumentale* (Lachenmann 1996 [1972]) as an example of technical sabotage is slightly ill-fitting in that in some ways it exemplifies instrumental *control* rather than disruption: expanding instrumental technique into timbral areas, and reflecting a concern to engage with and transform—while not breaking entirely with—historical convention and instrumental idiom (Wilson 2013). While Lachenmann’s scores might place significant technical demands on a player, an experienced performer of new music is likely to simply practise the required techniques until they become familiar and reproduceable.
- [8] For detailed discussions of the *Solo for Piano* see Holzaepfel (1994), Iddon (2013), Iddon and Thomas (2020), and Thomas (2013).
- [9] Indeed, there are over 16,000 possible combinations of the instrumental parts alone (Iddon and Thomas 2020, 268).
- [10] For detailed analyses of the conductor’s part see Iddon and Thomas (2020) and Iddon, Payne, and Thomas (2019).
- [11] Quotation used by permission of the John Cage Trust.
- [12] Quotation used by permission of the John Cage Trust.
- [13] The *Concert* might be the earliest piece to ask for a dismantled clarinet to be played. See Rehfeldt (1994 [1977]) for a discussion of later pieces to use the technique.
- [14] The situation was particularly extreme in early performances, with Cage suggesting an overall duration of around twenty minutes for a performance (with a tacit expectation that all pages would be used, in contravention to the *Concert*’s instructions), allowing a mere fifteen seconds per system for string players, and twenty seconds for winds (Iddon and Thomas 2020, 284).

- [15] There is much to say about the other techniques in the *Concert*, many of which bear the fingerprints of the musicians who premiered the piece at New York Town Hall on 15 May 1958 (see Iddon and Thomas 2020, 118–121). Moreover, there are some techniques (perhaps most strikingly, those for trombone) which speak to the potency of the social and cultural history of musical instruments and their associated performance traditions (in the trombone’s case, jazz). Yet, to address them all in sufficient depth goes beyond the scope of a single article. Furthermore, *scordatura* is arguably the most historically rich of the techniques, as well as one of the most prominent, being employed in seven of the thirteen parts.
- [16] See <https://cageconcert.org/performing-the-concert/apartment-house-and-philip-thomas-perform-the-concert-for-piano-and-orchestra> for a film of the performance.
- [17] All interviews were conducted by the project team, filmed by Angela Guyton, and transcribed by Emily Payne. The members of Apartment House who participated in the project are Bridget Carey (Viola 1), Reiad Chibah (Viola 2), Andrew Digby (Trombone), Ruth Ehrlich (Violin 3), Christin Forshaw (Bassoon and Baritone Saxophone), Jonathan Heilbron (Double Bass), Jonathan Impett (Trumpet), Anton Lukoszevieve (Cello), Aisha Orazbayeva (Violin 1), Melvyn Poore (Tuba), Nancy Ruffer (Flute), Jack Sheen (Conductor), Hilary Sturt (Violin 2), Philip Thomas (Piano), and Vicky Wright (Clarinet). Video recordings of the interviews are available on the project website.
- [18] The *Concert* is not the first of Cage’s pieces to feature *scordatura*; it is also employed in the cello part of *String Quartet in Four Parts* (1950) and *26' 1.1499" for a String Player* (1953–55).
- [19] Indeed, one player (Bridget Carey) suggested that this under-specification might be seen as an invitation to modify the pitch very radically, if desired.
- [20] Again, this is also suggestive of Cage’s apparent expectation that all pages should be played. Nevertheless, some musicians, such as Carey and Sturt, chose to reorder their pages. As a consequence, Carey decided to ‘reset’ the tuning at the top of each new page, to avoid over-tuning a string to the point that it snapped.
- [21] Interview with Bridget Carey, Ruth Ehrlich, Aisha Orazbayeva, and Hilary Sturt, 7 February 2017.
- [22] Interview with Bridget Carey, 4 July 2017.
- [23] Interview with Reiad Chibah, 4 July 2017.
- [24] Interview with Hilary Sturt, 3 July 2017.
- [25] Interview with Jonathan Heilbron, 2 July 2017. Indeed, it is worth mentioning that conventional string practice regarding *scordatura* is to try only to retune downwards where possible (or just tiny adjustments upwards).
- [26] Interview with Ruth Ehrlich, 3 July 2017.
- [27] Interview with Anton Lukoszevieve, 23 June 2017.
- [28] There are many examples of the two different functions of *scordatura* being applied to other pieces. Although used less frequently, some composers have prescribed the sounding pitches, for example, Marini, *Sonate op.8 no. 2* (1629) and Baillot, *L’art du violon* (1834). A more recent example is Scelsi’s *Anahit* for solo violin (1965). However, most *scordatura* is realised according to the placement of the fingers rather than the sounding pitches. Spahlinger’s *adieu m’amour* for violin and cello (1983) notates both the prescribed actions and the sounding results. See Arditti and Platz (2013), Boyden et al. (2001), Russell (1938).
- [29] Interview with Aisha Orazbayeva, 3 July 2017.
- [30] Interview with Anton Lukoszevieve, 4 July 2017.
- [31] Interview with Hilary Sturt, 3 July 2017.
- [32] The *Concert*’s disruption of the string players’ stable tonal reference points presents a significant departure from the way *scordatura* is usually employed in earlier string music. For example, the idiom is familiar in Biber’s *Mystery Sonatas*, which helps to orientate the performer (de Souza 2020).

- [33] *Scordatura* has been in use in string repertoire since the early sixteenth century, and has been employed by various composers including (most famously) Biber, but also Bach, Mozart, Mahler, and Stravinsky. It also exists in various traditions beyond western art music, such as Scottish and Scandinavian fiddle music, and North American old-time music.
- [34] *Scordatura*'s potency is exemplified in accounts such as that of the virtuoso Paganini choosing to detune his instrument in performance but being able to play perfectly in tune regardless. Carl Guhr, recalling a concert in which Paganini performed with perfect precision on a detuned instrument, describes Paganini's technique in hushed tones as 'wholly original' and 'incomprehensible in many respects' concluding that the virtuoso's 'manner of tuning his instrument contains the secret of many of his effects' (cited in Russell 1938, 95).
- [35] Interview with Jonathan Heilbron, 2 July 2017.
- [36] Interview with Aisha Orazbayeva, 3 July 2017. In both cases, the turning of the pegs and the checking of tuning could be made a more or less discrete event during performance, depending on the performer's inclination.
- [37] While it could be argued that these examples are simply an outcome of the chance procedures employed by Cage, the fact that *scordatura* is so carefully applied elsewhere in the parts suggests that his deployment of it in these cases is intentional.
- [38] There are other instances in the *Concert* of effects being employed as non-sonic gestures in their own right. For example, in the *Solo for Sliding Trombone* (page 173, system 5), the direction 'tuning slide out' is positioned at quite a distance from the subsequent flutter tongue B3, with no suggestion of when the slide should be reinserted. Andrew Digby chose to perform this as an independent gesture, returning the slide before playing the B. Other players who have performed the piece (Christian Lindberg and William Lang) attach the technique to the closest single sound.
- [39] Interview with Hilary Sturt, 3 July 2017. A similar observation was made by violinist Conrad Harris, who has performed in S.E.M. Ensemble performances of the *Concert*, who commented: 'You do get some excess noise but I kind of like that' (Interview with Conrad Harris, 20 May 2016).
- [40] Interview with Anton Lukoszevieve, 4 July 2017.
- [41] This 'break' in sound is audible in a recording of the *Concert* by The Barton Workshop, at 02'02" (The Barton Workshop 1992).
- [42] Interview with Vicky Wright, 4 July 2017.
- [43] Interview with Christian Forshaw, 3 July 2017.
- [44] The water key is referred to as the 'spit valve' in the brass parts.
- [45] Interview with Jonathan Impett, 3 July 2017.
- [46] Cage's experiments with material indeterminacy are arguably prefigured in David Tudor's (Cage's long-term collaborator and first performer of the *Concert*) work with electronics. See Iddon (2013), Kuivila (2004), Tudor (1972).

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## **Discography**

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