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Musical Notation

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The main goal of this essay is to propose and make plausible a framework for developing a philosophical account of musical notation. The proposed framework countenances four elements of notation: symbols (abstract objects that collectively constitute the backbone of a 'system' of notation), their characteristic 'forms' (for example, shapes, understood abstractly), the concrete instances, or 'engravings', of those forms, and the meanings of the symbols. It is argued that these elements are distinct. Along the way, several preliminary arguments are given for how one ought to understand them—for example, it is suggested that engravings represent symbols rather than instantiate forms, although they are characteristically seen to represent a symbol by being seen to instantiate an associated form. Having proposed this framework, the essay explores the nature of musical instructions, as the meanings of symbols, and offers an argument in favor of the commonly held (but recently challenged) view that those meanings are imperative. Specifically, composites of musical notation (paradigmatically, musical scores) primarily express instructional meaning, and denote something like 'sonic structures' only secondarily, in virtue of their primary, imperative, meaning.

1. Introduction

The understanding of musical notation as performing instructions—as the composer Tom Phillips (2013) says, "signs to tell you what to do and when to do it"—is both natural and widespread.[1] Even so (or perhaps because

1. Alperson (1984: 18) gives a relatively early expression of the view: "We usually think of the performer as executing or complying with a set of instructions encoded more or less completely by the composer, much as a baker might bake a cake according to a recipe created by someone else." Cf., for example, Kivy (2002: 205). A long list of scholars who take this view is given by Davies (2001: 100, note 1), who takes it himself. Not only philosophers do so. Ewert et al. (2014:120) refer

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so), although there are a few somewhat recent philosophical discussions of notation,[2] largely focused on the objects (mainly scores) built from it, there are philosophical issues to be addressed concerning the nature of notation itself (prior to consideration of scores or other composites of notation), the manner in which it expresses instructions, and the nature of those instructions.[3] Indeed, as natural as it is, even the bare claim that musical notation expresses instructions—henceforth called *Instructional Meaning*—is itself in need of some clarification and defense.

Goodman's (1968) extensive account of notation illustrates some of the issues that might be addressed, although it is easy to agree with Kivy's (2001: 12) assessment that Goodman's "valiant attempt to make hard-edged, logical sense of" musical notation was "defeated" by the complexity of the phenomenon. Indeed, the situation remains much as it was when Kivy hoped for "a real philosophy of musical notation, something that, in spite of the pioneering attempt of Nelson Goodman, we do not yet possess" (2001: 15).

This paper is of course not an attempt to provide a full-fledged philosophy of musical notation, but it is an attempt to make headway. To that end, it proposes a general framework for understanding musical notation and its meaning, one that strives for clarity and a degree of precision appropriate to the phenomenon, but is not committed to Goodman's "hard-edged, logical" methodology, in an acknowledgment that musical notation is not a formal language and will therefore not succumb to the methods applicable to formal languages. Nor is the present work committed to Goodman's nominalism (or any other general metaphysical view), though nothing here in principle rules it out either.

Section 2 begins with some initial distinctions, leading to four desiderata for any theory of musical notation (to be revisited later), then focuses on aspects of musical notation apart from its meaning, outlining a general framework for understanding notation. Section 3 discusses instructional meaning, clarifying some aspects of what it means to say that musical symbols express instructions, characterizing the nature of the instructions thus expressed, and arguing for *Instructional Meaning*. Section 4 briefly revisits the desiderata of Section 2 in light of the preceding, and concludes with a speculation about musical pieces.

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to "reading the instructions in the score" (encompassing all musical notation in the score, not solely directives and suggestions such as tempo markings and fingerings).

2. Substantive discussions include Goodman (1968: ch. IV), Kivy (2001: ch. 1; 2002: ch. 12), and Davies (2001: ch. 3). Ruta's (2019) recent argument concerning notation as it appears in scores will be addressed below.

3. Recent work in musicology goes some way in filling this gap, although, for obvious reasons, that work is not typically focused on philosophical issues. See, e.g., Treitler (2011), Rankin (2018), Magnusson (2019), and Grier (2021).

2. Composites, Symbols, and Engravings

To get started, we need to establish some basic terminology and distinctions. While that work has in some ways already been done by Goodman (1968), it is done there explicitly in the service of nominalism, which is not a background assumption of the present discussion. Indeed, below we will encounter reasons for rejecting a nominalist approach to notation, at least provisionally.[4]

Musical notation typically appears as a composite of musical symbols, intended to be interpreted by one familiar with the usual meaning of the notation. There are diverse purposes that such composites may serve. Davies (2001: ch. 3) reserves the term 'score' for a composite of musical notation intended, prescriptively, to delineate a musical piece. In addition to that purpose for composites, Davies mentions the purposes of reminding performers how to play a piece ('mnemonics'), and representing a performance ('transcriptions'),[5] and there are other (for example pedagogical and analytic) uses for composites. One desideratum for any theory of musical notation is that it explain, in a natural way, the possibility of these diverse uses for composites (*Diverse Uses*), as well as how, in some uses, musical notation easily combines with other information (the name of a composer, a style, a suggestive title, dedication, or programmatic description) to serve the given purpose (*Extra-notational Interaction*[6]).

In addition to diverse uses, there are diverse systems of musical notation. These systems may be (and perhaps typically are) deeply entangled with the musical practices in which they are used, a point that has been consistently emphasized by musicologists.[7] For example, the rhythmic notation used for the music of the Notre Dame school of polyphony in the thirteenth century would

4. Nothing here is meant to serve any argumentative purpose vis-à-vis 'fundamental' ontology. Nominalism is rejected not as a consequence of any metaphysical commitment, but because it is not a useful starting-point. Nor is it supposed, here, that there *cannot* be an ultimately successful nominalist understanding of musical notation that respects the various observations and proposals of this paper.

5. Based on the distinction between 'prescriptive' and 'descriptive' uses, Seeger (1958) proposed a graphical notation to do the latter job. The distinction has proven influential, but not the proposal. Cf. Magnusson (2019: ch. 7) and Grier (2021: 1ff.), the latter viewing Seeger's uses of notation, plausibly, as extremes on a spectrum of possibilities.

6. The modifier 'extra-notational' is not meant to deny that representation of information such as the name of the composer is 'part of' the musical notation—the scheme described below explicitly allows for that possibility.

7. Seeger (1958: 193) observes that musical notation is a "matter of norms determined by the vast aggregate of practice and codified by generations of workers." Cole (1974: 20) says that "only knowledge of the local situation tells us what is or is not allowable" by musical notation, citing several examples. Magnusson (2019: 96) says of musical scores that "the assumption is that the performer is embedded in the cultural context of the particular musical practice."

be opaque without (at least implicit[8]) knowledge of the rhythmic modes of that practice. The point is not only an historical one—the meaning of a more modern piece of notation such as 'Fm7', for example, relies on a background structure of tonality that is specific to some (and not all) musical practices. That understanding may be implicit, for example by being more or less built in to the physical instrument one uses to execute 'Fm7' (along with the conventional manner of performing on that instrument), but it is nonetheless required to make sense of the notation. A further desideratum for any theory of musical notation is that it make sense for a wide range of systems of notation (*Diverse Systems*), and that it explain how and why notation has this intimate relationship with practices (*Entanglement with Practices*). (There is no pretense, here, that all readers will agree that these four desiderata are such. They are presented mainly as background information about what is, in part, motivating the present account; they will reappear briefly at the end but otherwise remain in the background.)

While remaining committed to *Diverse Systems*, for the sake of convenience and familiarity this essay focuses on the notation that has been used by composers in the Western tradition, and used by musicians to aid in the practice and performance of those compositions. (Even this restricted focus encompasses quite some diversity—see Grier 2021.) Evaluation of the proposed scheme in the context of systems of notation outside that context is a project for another time (and for experts on those systems). Our next task is to describe that scheme.

Musical notation consists of individuable symbols that bear some musical meaning. 'Symbol' is ambiguous (much as 'word' is). It can refer to an *engraving*, that is, a concrete physical manifestation of the symbol, or to a *kind* of which engravings may be members.[9] Henceforth, 'symbol-form' (or just 'form') refers to the latter, and 'symbol-engraving' (or just 'engraving') to the former. In the cases familiar to many musicians, symbol-forms are typically geometric shapes (a dot, a line, a circle, certain combinations of them, etc.), although for musical notation engraved as braille, for example, symbol-forms are configurations of raised dots. We thus countenance (at least) two distinct kinds of object: symbol-

8. Exactly how the notation was used is difficult to reconstruct. Busse Berger (2005) makes a strong case that it was (at least at one time) largely mnemonic. Even so, singers must have had in mind (with explicit theoretical awareness or practical familiarity) a characterization of rhythmic possibilities (as described in the mensural theory of the day), limiting the possible referents of any given ligature (grouping of notes), without which the mnemonic purpose could not have been served.

9. In order to avoid mistaken associations with his nominalist agenda, I am avoiding Goodman's (1968) terminology, although there is a rough correspondence between his categories and mine. His 'atomic inscription' corresponds to my 'symbol-engraving'. His 'atomic character' corresponds to my 'symbol-form'. His use of 'compound' (of inscriptions or characters) corresponds to my use of 'composite' (of engravings or forms).

forms and symbol-engravings.[10] For specific symbols, for example, a slur, we may say 'slur-form', and 'slur-engraving'. When context makes the intention clear, or when we mean to refer to both concepts at once, we may drop the suffixed '-form' or '-engraving'. That we can do so naturally is itself an interesting observation—the English word 'symbol' carries (at least) both meanings.

As used, here, 'symbol-form' refers to objects that somehow (to be discussed below) express some musical meaning, in standard practice, and whose proper parts do not, with an exception to be noted below. (While this section focuses on symbols and not their meanings, some appeal to meaning is helpful at the outset—the next section takes up specifically the *instructional* meaning of symbols.) Exactly which objects are bona fide symbol-forms in this sense may be difficult to specify with complete precision or confidence, and innovations may introduce new meanings, or erase old ones, that will alter an object's status. The quarter-rest-form generally used in printed music today probably evolved from two eighth-rest-forms, but musicians may not generally 'see two eighth-rests' in a quarter-rest any longer. Context matters as well. In much contemporary printed music, the stems attached to noteheads have no musical meaning,[11] by which is meant that a competent musician will do the same thing (or interpret the notation in the same manner) whether the stem is present or not[12]—but in some music, stems indicate musical voices (for example, upward stems for the sopranos, downward stems for the altos). These dependencies on who is reading the music and for what purpose, and in what (musical and historical) context, warn us against treating musical notation as if it were a formal language. At the same time, in practice it is usually clear, in specific cases, what counts as a 'complete and non-composite' symbol-form; the differences among musicians and contexts do not generally cause any ambiguities that are not easily resolved in practice.

Considered purely as *shapes* (or configurations of raised dots, or whatever), symbol-forms may 'accidentally' have musically meaningful proper parts, in the sense of having the same shape as some other symbol-form—the *shape* of the

10. There is a further distinction to be drawn, between tokens and occurrences (Wetzel 2009: ch. 7). A token of a type is a concrete manifestation of the type in the world. In contrast, an occurrence of a type is an *abstract* manifestation of the type, typically as part of another type. Consider, for example, a composite of symbol-forms associated with the C-major arpeggio C1-E2-G2. It contains *occurrences* (but not tokens, i.e., not symbol-engravings) of the symbol-forms for the notes C1, E2, and G2. Tokens (engravings) of this arpeggio would then contain engravings of those latter symbol-forms.

11. An anonymous referee helpfully points out that some engravings may exist purely to aid in readability. Such engravings would not count as bearing 'musical meaning' on this account, since they do not affect the *content* of one's interpretation, but only the ease with which one recognizes the objects to be interpreted. ('Interpretation' here means 'interpret the meaning of the musical symbol' not 'performatively interpret the musical piece'.)

12. Stems were once used to indicate rhythmic organization. See Ovenden (2021: 37), and the manuscript example in Figure 1, page 32.

top half of a wholenote-form is also the shape of a slur—but these parts do not contribute their (potential) meaning to the meaning of the whole, and in that sense they are not 'musical parts' of the symbol-form. An exception, foretold above, must be made for 'continuous' symbol-forms, such as crescendo-forms and slur-forms, which contain, as proper parts, crescendo-forms and slur-forms. (The initial segment of a crescendo is again a crescendo.) To handle this kind of case, we could distinguish 'discrete' from 'continuous' symbol-forms, noting that the latter are bona fide symbol-forms even though they contain bona-fide symbol-forms as proper parts, but that point, having been noted, will not play a role in what follows.

For some symbols, a suitably able performer can, in virtue of understanding it, produce a sound (or a stretch of silence) in accordance with the meaning of the symbol, even if symbols typically leave much undetermined. Presented with a wholenote-engraving, and nothing else, I may hum a pitch for 'four beats'. Of course, the wholenote symbol does not *completely* fix what I do (nor does any other symbol or composite of symbols)—in this case, I would choose what counts as four beats (and I might share my understanding of the latter with you if you are in doubt that I have produced the sound correctly), which pitch to hum, how loudly to hum it, and so on. In contrast, presented with an empty stave-form, there is no sound (or silence) that I can make that would generally be accounted 'in accordance with the symbol'.[13]

Nothing crucial turns on whether the distinction between these two types of symbol is a matter of degree or a matter of kind, but it does prompt a provisional division of symbols into several categories. Some ('sonic') symbols are more or less immediately translatable, by any performer familiar with the relevant conventions of interpretation, into an action that will produce some characteristic perceptible feature of a relatively brief stretch of musical sound. Other ('supporting') symbols serve as scaffolding that enable sonic symbols to have the specific meaning that they do (in a given context). Notes, articulations, tempo markings, and dynamics are in this sense sonic, while staves, clefs, and time signatures are in this sense supporting. Some authors have identified a third type of ('explanatory') symbol, those that give information about the expressive interpretation of a piece or passage (e.g., 'cantabile'), and a fourth ('didactic') type, those that give explicit instruction or suggestion to the performer about technique (e.g., fingerings or bowings[14]). In addition to these notations, composites may include other

13. I might creatively make some sounds that suggest that I understand what staves contribute to the meaning of musical notation, but there is no standard type of sound that I could make that would be recognized as 'doing what the stave (alone) says to do'.

14. Didactic symbols may in principle be more than suggestive, and indeed serve sonic purposes. On many wind instruments, for example, many pitches can be played with any of two or more fingerings, and there can be subtle differences in the sound depending on which fingering

markings (such as the title of a piece or the name of a composer or the location of a performance) that provide circumstantial information, which may interact with the (other) musical notation in complex ways. Some may wish to consider them essential to the composite itself (at least in some contexts), so that they are, in effect, another type of ('biographical'[15]) musical notation.

There is not necessarily a sharp categorization to be made, here (see, e.g., note 14). Nonetheless, these distinctions are helpful, at least for specifying the main target of the present analysis, and to that end, let us notice that at least (but not only) in the context of the Western European tradition, composites such as scores and transcriptions crucially include unambiguously sonic symbols. In particular, any musical *score* that lacks such notation is an anomaly, whose analysis is best left to after we have some grasp of the paradigm cases,[16] that is, composites that unambiguously contain sonic symbols and whatever supporting symbols are needed to render the sonic symbols interpretable at the level of specificity required by the purpose at hand. Explanatory and didactic (and biographical) symbols are optional (for present analytical purposes, but not for all purposes—an edition of Beethoven's Piano Sonata 32 lacking the initial, explanatory, 'Maestoso' is incomplete). These cases are taken as paradigmatic, here, because they are *performable* composites of notation, where 'performable' does not mean that there is any musician capable of performing it, but that those who understand the notation thereby understand what *would* be required to perform it (even if nobody can do what is required—the case of unperformable scores is briefly addressed below).

One of the chief contentions of the present section is that the story as we have told it to this point is incomplete. Specifically, in addition to (concrete) symbol-engravings and the (abstract) symbol-forms that they instantiate, there is a third (abstract) object, 'the symbol itself' (and a fourth—the meaning of the symbol, to be considered in Section 3). The symbol itself is a created, abstract, artefact (like a novel or a blueprint or a word[17]), with three features: it is associated with sym-

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is used. A composer who is aware of this fact, and desires a particular effect, could indicate the desired outcome by means of what appears to be a merely advisory instruction about the means of production, in essence using a didactic symbol for the purpose associated with sonic symbols.

15. The term is intended to refer to the 'biography' of the composite (including events or circumstances that occasioned it, for example, the composition or performance of a musical piece).

16. There are experimental scores that depart from standard musical notation in various ways. In many cases, these innovations resemble myriad such ventures over the centuries, some of which get taken up into practice, and some of which become historical curiosities. There are also scores whose creators attempt to depart entirely from the conventional use of musical symbols. It is the latter sort of notation that I am setting aside, here. (Consider the graphic scores of the mid to late 20th century. Evarts [1968: 412] aptly describes performances of such scores as "the improvisations of instrumentalists reacting to graphic pictures", i.e., as reacting, not reading.)

17. The thought behind the proposal that there are symbols in addition to forms and engravings and meanings has interesting parallels in (and is partly informed by) debates about the ontol-

bol-forms; it has a meaning; and it is made for use in the context of a system of notation, and as such generally bears important relationships to other symbols in the system. (Below these relationships will be called the 'grammatical' properties of the symbol.) A symbol is created by intentionally associating a meaning with a symbol-form, with the intention to be used in some system of notation. Both the meanings and the symbol-forms associated with a symbol (in the present sense) can and often do change over time and from one context of practice to another. Symbols can also be adopted into new systems of notation. Individuals or groups may have intentions directed at or informed by symbols, and it is in virtue of those intentions that the symbol may take on new meanings or forms. ("I shall now write a quarter-rest in this new fashion." "When some jazz composers write 'FMaj' they mean to play the triad F-A-C plus the seventh, E.")

An example of such creation might help to illustrate the general idea. The thirteenth century treatise *De mensurabili musica*[18] (*DMM*) introduces, apparently for the first time in the history of Western music, the general idea of symbolically representing metric duration, an idea that remains part of Western musical practice, albeit in a radically altered manner.[19] Hence, for example, the 'recta brevis', whose form was a square, was (intended by the author of *DMM*, normally, in the practice of Notre Dame polyphony, to be) accounted twice the duration of the 'semibrevis', whose form was a diamond.

But what exactly did the author of *DMM* introduce, or invent, or construct? The physical *thing* that he or she initially produced—sitting, let us imagine, at a desk, quill in hand—was a particular trail of ink, an object of antiquarian interest, perhaps, but not one that plays any direct role in musical practice. (Indeed, it probably no longer exists.) Neither did *DMM* introduce the forms 'square' and 'diamond'—those forms had already played a (different) role in musical notation.[20] Instead, the author of *DMM* invented a new musical *symbol*—an abstract

ogy of words in the philosophy of language, which, however, cannot be carefully explored here (see Kaplan 1990; Hawthorne & Lepore 2011; Irmak 2019; Miller 2020). The notion that there can be created abstract objects is objectionable to some, though typical objections seem to be based on intuitions whose force is entirely unclear (to me). (Perhaps the notion of creation can be eliminated in favor of 'discovery'. I set that possibility aside for present purposes.) See Friedell (2019) and references therein.

18. The treatise has traditionally been attributed to Johannes de Garlandia, but his authorship has been questioned. See Pesce (2011) for a brief account of its historical significance, Roesner (2009) and Grier (2021: ch. 3) to get into the weeds, and Baltzer (2001) for a discussion of authorship. (I am simplifying the account—for example, there are notable differences between manuscript versions.)

19. The point is not that we no longer (very often) use the shapes of *DMM* as notehead-forms, but that the background theory of rhythm is radically different. Nonetheless, the general idea of using symbols to represent metrical duration has persisted, and indeed proved to be extremely fruitful in the development of musical rhythm in Western practice.

20. Such notation is attested, for example, in the *Antiphonarium Sancti Dyonisii* (ca. 1140–1160), in which the scribe follows the standard practice of writing square-shaped neumes in gen-

object endowed with musical meaning, representable by engravings, and bearing certain relationships to other symbols in the system of notation in virtue of the theory of rhythm that was developed in the treatise. (For example, precisely which sequences of the new symbols are admissible depends on that theory.)

Subsequent uses of or appeals to, for example, the semibrevis, are uses of and appeals to the same symbol because those uses bear the correct relationship to the invention. The invention of the semibrevis in *DMM* thus constitutes a kind of principle of individuation. Two symbols *differ* (just as, we might think, two words differ, even when, for example, they sound the same or are spelled the same—see note 17) when they are related 'in the right way' to two different origins (inventions). Exactly what that relationship is, is a matter for further investigation. In the context of words, Kaplan (1990), for example, seems to think that there is a chain of intentions to repeat prior occurrences of the word. One might say the same of musical symbols—the author of *DMM* created the symbol called 'semibrevis' and used it for the first time; an editor or composer intends to repeat it; another editor or composer intends to repeat *that one*, and so on; and a chain of intentions of that kind makes it the case that later uses are uses of the same symbol that was created in *DMM*. As noted earlier, such intentions also underwrite the possibility of changing forms or meanings (while the *symbol* is otherwise unchanged).

However, this view (about both words and musical symbols), while correctly emphasizing the importance of intention, is an implausible account of what people are doing. More plausibly, they intend to *use* the symbol (or word), but not necessarily to 'repeat earlier uses'—one might, for example, have learned about the symbol (including its meaning) while knowing nothing about earlier uses (or indeed whether there *are* any), hence unable to intend to repeat those uses.[21] The matter will not be settled here, in any case, and the only claim on which the present account rests is that there is *something* (very likely involving intentions) about the history of usage of a symbol that ties later uses to the initial invention and makes them uses of the same symbol. In the present example, the initial invention is conveniently attributable to the author of *DMM*, but in general (again similar to the creation of words), it may be the result of collective activity on the part of members of a musical (or linguistic) practice, and not easily pinpointable in time or space.

But do we really want 'symbols' in our account of notation? Aren't forms and associated meanings enough? One way to avoid countenancing symbols would

eral, but often uses diamond-shaped neumes for descending notes (which would have been quite natural, for a right-handed scribe, because of the motion of the pen). The manuscript is available in digital form from gallica.bnf.fr. See, e.g., page 3r.

21. The argument that I have in mind, here, is an analog of the argument made by Hawthorne and Lepore (2011: 461ff.) regarding Kaplan's parallel claim about words.

be to say that what *DMM* introduced was a new *association* of meaning and form. Specifically, *DMM* articulated a theory of rhythm and proposed an association between a (pre-existing—see note 20) form and a meaning expressed in terms of that theory. In that case, one could say that symbols have been 'reduced' to just symbol-forms together with a meaning. So what we have called a 'symbol' is really just a symbol-form-plus-meaning.

The challenge to this reductive view is that it creates difficulties for finding a principle of individuation for symbols. (Recall that historical creation-events do the work of individuating symbols on the proposed account.) The obvious places to look for such a principle are in forms and meanings. Let's examine each in turn.

Individuating symbol-forms is theoretically, and sometimes practically, quite challenging, even if we restrict our account to a single modality (such as printed notation). What is a quarternote-form? That is, in virtue of what are all (printed) quarternote-forms categorized as such? The obvious place to start is with something like morphological similarity, so that the identifying features of quarternote-forms would be spelled out somewhat as: "every instance of a quarternote-form is a more or less elliptical shape, filled in, with a vertical line (the 'stem') tangent to it". But this description is wrong. Stems are often left off. Notation for percussion instruments often uses crosses or other shapes in place of the 'more or less elliptical' notehead; strumming patterns for guitar often use a slanted line only, or a line (a 'stem') with a kind of numerical tablature as the notehead. In light of such observations, one might try to formulate a disjunctive description, but that approach will be frustrated by even a brief look at the hand-written manuscripts of famous (or not-so-famous) composers,[22] which reveals a morphological rat's nest of quarternote-engravings, not to mention whatever the future holds for quarternote-forms.[23]

Nor will it do to deny that 'deviant' engravings are genuinely quarternote-engravings. Consider, for example, that musicians, composers, editors, and so on are generally able to read and understand such engravings as 'quarternotes', without disruption to their understanding of the system of musical notation. Learning that an odd squiggle on a Janáček autograph score (see note 22) is a quarternote, one simply learns, and accepts, that it is so. I might say that Janáček

22. Cole (1974: 24) displays an example of a page from an autograph score by Janáček (the engravings of which bear little discernible morphological resemblance to those of standard western notation; i.e., the score is very messy) and points out that with some care, knowledgeable readers (such as editors) can find the meaning in it.

23. One could of course remain optimistic (as Bromberger [2011: 492ff.] seems to suggest, mutatis mutandis, in his commentary on the parallel debate about words) about the possibility of a purely (though highly disjunctive) morphological account. Apart from a prior commitment to nominalism, it is hard to see what would motivate that optimism. (No even remotely promising account has been proposed.)

"wrote quarternotes in an odd way," but I will not say that he failed to write them. And yet he *did* fail to instantiate the morphological kind (if there be any) of the quarternote-engravings of my childhood music lessons, and very likely any adequate morphological kind that one could formulate, or at least would have formulated, prior to seeing how he wrote them. To make matters worse, consider another composer, Janáček*, who wrote nearly as Janáček did, except the former's squiggle is a *halfnote*. Any 'morphological' account of quarternote-forms would then need to distinguish between Janáček-squiggles and Janáček*-squiggles, identical in appearance, but belonging to different 'morphological forms' nonetheless. In short, the prospect for *any* account of the relation of morphological similarity among the various objects that in fact serve as quarternote-engravings, in virtue of which they are quarternotes, feels hopeless.[24] One might of course hold out for such an account—and the nominalist move of asserting that some set, however unruly, exists and constitutes the morphological kind, is admittedly also available—but it is hard to see why we should, nor what explanatory power those accounts would have.

In light of the lack of promise of finding a morphological principle of individuation (i.e., individuating symbols by their forms), the reductive theory could take a different tack, individuating symbols not morphologically, but semantically. In that case, again, one could reduce symbols to symbol-forms, appealing to meaning (rather than some inaccessible morphological account of forms) to 'unite' the disparate symbol-forms into an individual 'symbol'. There is something correct about that approach, inasmuch as symbols are indeed (on the present view) the bearers of meaning. However, tying the *identity* of a symbol to its meaning exacts the price of denying that symbols can change meaning, or mean different things in different contexts. But it is natural and common to say that the meanings of symbols *are* variable in those ways. For example, the flat accidental in Gregorian chant means 'lower this pitch by a half-step until the end of the present word, or a barline, whichever comes first', while in contemporary music one ignores the clause about the word (even in music with lyrics). One could say that the Gregorian accidental and the modern accidental are 'homonyms' of a sort, but the more natural understanding, perhaps, is that the meaning of the accidental symbol evolved over time, or that the symbol means different things in different contexts, and, again, this idea is naturally captured by distinguishing the symbol from its meaning(s).

While the preceding considerations might not be conclusive, they tell strongly against the reduction of symbols to symbol-form plus meaning. Therefore we shall continue to use the scheme that distinguishes engravings, forms, symbols,

24. The same point, with respect to the letters of the Roman alphabet, is made by Wetzel (2009: 61–65), who argues against what she calls the 'shape theory' of letters (i.e., the theory that all tokens of a letter are such in virtue of their having a common shape).

and their meanings. In this scheme, symbols are (at least prima facie—see note 4) abstract objects that have at least three distinguishing and essential features. First, they bear musical meaning. Second, they are representable or instantiable concretely (as engravings). Third, they are embedded in systems of notation, meaning in part that they may bear certain relations of 'grammaticality' to one another. For example, just as a transitive verb like 'to throw' must take a direct object (e.g., 'the disc'), certain symbols, such as a slur, must be properly associated with certain other symbols, such as notes. Finally, there is (mentioned above) the suggestion that symbols are individuated by 'creation-events' together with later uses of the symbols being appropriately connected to those events. Exactly what that connection may be is a matter beyond the scope of this essay, but plausibly it involves the intentions of the users of symbols, and specifically the intention to use the same symbol that was created, or the intention to use the same symbol that was used by one who intended to use the same one that was created, or . . . (and so on). Once a symbol gets taken up into a musical practice, one can summarize the preceding 'chain' of intentions as simply the intention to use the symbol that has become a symbol *for* the community of practitioners. Henceforth this way of categorizing elements of musical notation will be called the 'notational scheme'.

The notational scheme leaves open the question of the relationship between symbols and symbol-forms, and for the reasons just rehearsed, that relationship is not easy to understand. One might even be tempted to eliminate the category of symbol-forms from the notational scheme altogether, but to do so would be to go too far. Symbol-forms play an important intermediary role between symbols and their engravings, specifically, in one's ability to associate symbol-engravings with symbols. What follows from the notational scheme and the considerations (about morphological variability of engravings and semantic variability of symbols) just above is not that symbol-forms do not typically and characteristically play this role, but that they do not *essentially* play this role—to associate a symbol-engraving with a symbol is not *ipso facto* to recognize it as an instance of some type of shape (for example), that is, as an instance of a symbol-form.

Instead, motivated by a suggestion of Szabó (1999) regarding the relationship between words and tokens of them,[25] let us add to the notational scheme the idea that symbol-engravings *represent* symbols (as a picture of a dove may represent peace). One's recognition of this representation may be (and typically is) aided by, but is not constituted by, one's recognition of a type of shape (a sym-

25. Szabó's main argument for his view is the 'inverted-word' argument. That argument can be adapted into an argument concerning musical notation. (Imagine an instrumentalist who learns the notes on the staff incorrectly, but also has learned incorrect fingerings in a manner that cancels out the first error and results in 'correct' playing.) However, the musical analog of the original argument does not strike me as particularly convincing.

bol-form) to which the engraving belongs. Other things also contribute to one's ability to recognize that a given engraving represents a given symbol, including, especially, one's recognition of the intention to use the engraving to bring to mind the symbol and its meaning, a recognition that is itself enabled by familiarity with and participation in the relevant musical practice. One advantage of the notational scheme, in fact, is that it both avoids the implausible (indeed, as we noted, empirically false) claim that engravings are associated with symbols *solely* in virtue of their shape, and thus makes room for other factors, especially perceived intention, to be relevant.

The notational scheme has other merits as well. It explains how practitioners may be ready and able to associate unfamiliar engravings with existing symbols. One need not accept their morphological similarity to known engravings of the symbol (which might be a hard pill to swallow), nor need one reconceive the symbol-form associated with the symbol in a manner that admits the unfamiliar engravings. Instead, one need only accept that the unfamiliar engravings are intended to represent the symbol (which may be easy to accept, as new representational conventions are generally). It also explains a phenomenon not yet mentioned, namely, that the *same* shape may be used to represent *different symbols* in different circumstances. Moreover, those circumstances are not always characterizable in purely syntactic, or more generally morphological, terms. Instead, we must appeal to things like authorial intention and the expectations of the relevant musical practice. In mensural rhythmic notation, for example, the 'dot' plays several different roles, not always disambiguated by its position relative to other symbols—instead, one must infer meaning based on the inferred intention of the composer, an inference that would plausibly rely on a common understanding of the relevant musical practice. The scheme thus addresses the desideratum *Entanglement with Practices,* inasmuch as correct recognition of an engraving as representing a symbol can require familiarity with the relevant musical practice. (If association of engravings with symbols were simply a matter of shape-recognition, then no familiarity with practice would be required for identification, though might still be needed for understanding meaning.)

To sum up: On the proposed scheme, our account of musical notation (especially the sonic symbols and whatever supporting symbols are needed to complete their meaning) countenances four objects of interest: symbols, symbol-forms, symbol-engravings, and the meanings of symbols. The engravings represent symbols, characteristically but not essentially with the intermediary aid of (i.e., by being seen as instances of) symbol-forms. Symbol-forms are associated with symbols inasmuch as instances (engravings) of the form are understood, as such, by competent practitioners, to be intentional representations of the symbol. To say that a symbol-engraving 'conveys' a meaning is to say that the symbol-engraving, in appropriate circumstances and by competent practi-

tioners, is understood to represent the symbol, which bears the meaning—hence conveyance depends on representation. To say that a symbol-form 'expresses' a meaning is to say that the symbol-form, recognized as such by competent practitioners, is understood to be associated with a symbol, which bears the meaning—hence 'expression' depends on the association of a form with a symbol. Let us turn, now, to a consideration of those meanings.

3. Musical Instructions

According to *Instructional Meaning*, the meanings of symbols (and again, the focus here is on sonic symbols and whatever supporting symbols are needed to complete their meaning) are imperative, and specifically instructional. A complete account of instructional meaning would require a lengthy foray into the semantics of imperatives, an area of research where firm results are still forthcoming.[26] Even so, we can make several observations about the nature of instructional meaning and its representation that will help make the case that the natural view (paired with the notational scheme) fares quite well with respect to the desiderata mentioned at the beginning of Section 2.

In regular usage, 'instruction' (and, mutatis mutandis, 'imperative', which names a category that encompasses instruction[27]) may refer to an instructional meaning, an utterance that conveys instructional meaning, or an utterance-type whose instances typically or standardly convey instructional meaning. The term 'instruction' is reserved, here, for instructional *meaning*. Utterance-types include symbol-forms, and utterances include engravings, but they are both more general—for example, an oral utterance of 'crescendo' may (linguistically rather than symbolically) convey the instruction to gradually increase volume, also conveyed by the appropriate musical symbol-engraving.[28]

To help fix usage (with first occurrences of all semi-technical terms in italics): The sentence "place tab A in slot B" (understood as an *utterance-type*) *expresses* an *instruction*(al meaning), one that presumably has something to do with the

26. The observations made here about imperatives are intended to be neutral with respect to that ongoing discussion. For a review, see Kaufmann (2020: esp. section 4). At the same time, commitment to one or another semantics for imperatives could have interesting consequences for one's understanding of musical instructions. Pursuing that point is beyond the scope of this essay.

27. Imperatives also include commands, suggestions, invitations, and so on. In fact, as used here, 'instruction' is intended to encompass at least some of these other flavors of imperative, for example suggestions and invitations. (Sometimes instructions are merely suggestions, as in "optionally, add walnuts to the batter at this point".)

28. In linguistics, 'utterance' typically refers to concrete instances (paradigmatically, spoken instances, but also written instances) of linguistic entities such as words and sentences. We are extending the term to include symbol-engravings.

addressee's arranging the tab and slot as described. (Precisely what an imperative meaning is remains an open question—see note 26.) Concrete *utterances* of that type may *convey* that meaning, although circumstances (in linguistics, 'pragmatics') can affect what meaning is conveyed, causing it to deviate from what is expressed by the type. In parallel, the *composite* of *symbol-forms* of which the composite in Figure 1 is (on the page or screen before you) a composite of *symbol-engravings* expresses an instruction, addressed to the performer known as '1st piano', which has something to do with that addressee's playing certain pitches (C3-D3, etc.) in a certain manner (forte, presto furioso). This composite of symbol-forms *occurs* (see note 10) in the score of Saint-Saens's *Hémiones*, and in other places (such as this essay). The corresponding composite of symbol-engravings on the page or screen before you, or in concrete copies of *Hémiones*, convey that instruction (when they do) in virtue of their representing, to competent participants in the relevant musical practice, the corresponding musical symbols, with their attendant meanings.

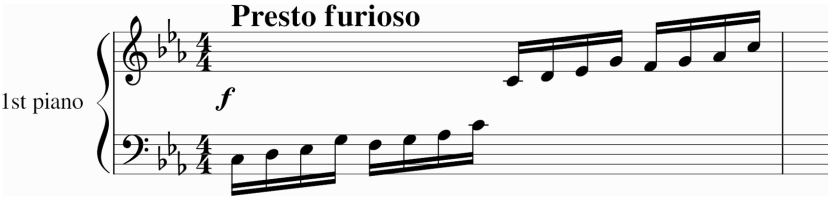

Figure 1: The Opening of Saint-Saens's *Hémiones.*

Utterance-types express (and their utterances may convey) imperative meaning in various ways. In addition to linguistic expression, there is iconic expression, in which meaning is expressed by means of figures or symbols that bear some resemblance to what is to be done. An image of a face with a mask, these days, may be understood (in the right context) to express, iconically, the same meaning that 'wear a mask' expresses linguistically. There is also symbolic expression, in which imperative meanings are expressed by means of a conventional association between some utterance-type and the meaning.[29] A red octagon by convention can express the meaning 'stop here'. There are as well mixed cases, in which multiple modes of expression may be involved (e.g., an iconic sign with text), and multi-modal cases in which one and the same element may

29. The distinction between iconic and symbolic expression is famously made by Pierce, who also distinguished these types from 'indexical' expression, i.e, expression by means of some causal connection (for example between smoke and fire). See Liszka (1996) for details. Indexical expression does not normally occur in music, although one might understand Seeger's (1958) advocacy (misguided, I would say) for his graphic notation in terms of a claim that it is closer to an indexical expression of music (making it what he called an 'objective' notation).

have (i.e., derive its meaning from) multiple sources, such as iconic and symbolic features. The shape of a right-hand arrow, for example, does not intrinsically 'point to the right' or instruct one to 'go right', but there might be some element of iconicity involved, inasmuch as actual objects of more or less that shape do tend to travel naturally (let us suppose) 'with the pointy part leading the way'. If Scruton (2016: 46) is correct that hearing musical lines metaphorically as 'moving up and down' (among other things) is indispensable to hearing them as music, then there may be, in similar fashion, both iconic and symbolic aspects to the expression of meaning by notes in staff notation. And insofar as small things tend to be quiet and large things loud, crescendos and decrescendos may also be partially iconic, partially symbolic. (There are plenty more examples.)

Imperatives (i.e., imperative meanings) may also be conveyed by ostension. For example, either because of prior arrangement or convention, or because the context of a situation makes it clear what I am doing, I can convey an imperative to you simply by doing (or somehow gesturing at) the thing that I instruct (command, invite, etc.) you, also, to do. The right kind of arm-swing towards a doorway, in the right context, conveys an invitation to walk through the doorway. Simply walking through the doorway oneself can also convey that imperative to another, as can (in the right context) pointing to a person who has already gone through. In general, ostension may be used to convey instructions in (at least) two manners: by somehow indicating (including by displaying) what is to be done, or by indicating the result of having done it. A trained musician may thus 'receive instruction' in how to play a particular piece merely by hearing it.

Instructions always place a demand on addressees to bring their own expertise to bear. Even as simple an instruction as 'raise your right hand' presumes (among other things) that addressees are able to control their own bodies. The instruction "preheat the oven to 180°C" similarly presumes that addressees can supply the steps required to achieve the result. It can be important not to include a more fine-grained specification of those actions in the instructions (e.g., not to provide instructions, effectively, in 'how to be a competent user of your oven') because doing so could render them ineffective for some addressees—the actions that you undertake (with your digitally controlled oven) may differ significantly from mine (with my wood-burning oven). The instruction to "preheat to 180°C" is thus best read as something like "do whatever it takes to preheat your oven to 180°C".

A corollary to the preceding point is that two distinct instructions may both be instances of a more general instruction, and from the point of view of the more general instruction (which may be merely implied and not explicitly expressed or conveyed), achieve the same outcome. (Consider "set the oven to 180" and "set the oven to gas mark 4". They are finer-grained versions of a more general, normally not explicitly conveyed, instruction to bring about a certain thermal energy inside the oven, in a manner effective for cooking.)

Indeed, not only is there generally an appropriate level of detail (conversely, generality) for instructions (given the intention behind them, including the intended addressees), but also it is in general (and perhaps always) impossible to specify with complete precision what it takes to obey them—perhaps something will always be left to the competence of the recipient. If, instead of "set the oven to 180" I instruct you to "turn the dial until the arrow matches the 180-mark", I still presume that you are competent in dial-turning, and matching arrows to marks, and so on.

Instructions have a per se aim (henceforth, 'aim'), by which is meant whatever is supposed to be achieved solely in virtue of following the instructions. There are different types of aim. For example, the aim of the instructions for baking bread (as typically understood) is a thing, a loaf of bread. The aim of the instructions for operating a tractor is an activity, the activity of operating the tractor. In both cases, one may (and typically will) have further objectives that these aims serve (to eat the bread, to plow the field), but those 'second-order' objectives are not per se the aim of the instructions. I may wish to sell, rather than eat, the bread; I may wish to haul logs rather than plow the field. In both cases I would still follow the instructions for baking bread or operating a tractor, and I would take as an objective to achieve *their* aims, albeit in the service of some second-order objectives.

In general, the aim of instructions (as the term is used here) is whatever objective typical authors and addressees of the instructions will understand to be adopted by those who genuinely follow the instructions, whatever *other* objectives they may have. The typical authors of recipes for bread expect (and their intended audience understands) that the addressee will (in following the instructions) seek the production of a loaf of bread, whatever else the addressee may have in mind.

One may also 'proceed according to' instructions without taking the aim as an objective. For example, one might proceed according to the instructions for baking bread not to produce a loaf of bread (not even instrumentally) but instead as an ironic commentary on the hegemony of the recipe in home baking (an act of performance art). Let us say that one 'follows' instructions when the actions are performed for the purpose of achieving the aim of the instructions (and perhaps other objectives downstream), while one (merely) 'acts them out' when one does not take the aim of the instructions as one's objective (even instrumentally).[30] (Exactly how instructions get a canonical aim, and exactly what it means to take this aim as one's objective, is tricky business. Settling these issues is not essential for present purposes.)

30. The point here is not to provide an account of following instructions—other conditions might need to be met for bona fide 'following'—but to distinguish 'following' from 'acting out'. We are, of course, bumping up against difficult questions concerning action and intention, which cannot be pursued, here. For a helpful review see Setiya (2003).

Some instructions may be 'self-directed' in the sense that they have as their aim only that they be followed. At first blush, such instructions may seem pointless. ("Why are you following these instructions?" "For the sake of doing what they say.") However, sometimes following self-directed instructions is in fact the only, or a characteristic, or a desirable, way to achieve some downstream objective, which may be one's motivating objective, achieved by instrumentally adopting the objective that the instructions merely be followed.

Consider, for example, the instructions for performing a push-up. ("Lie facing down. Place your hands palm-down on the ground roughly shoulder-width apart . . .") They appear to be self-directed—that is, their aim is *just* that one's body is moved in accordance with the instructions for doing a push-up—because there does not appear to be any other objective that is characteristic of genuine cases of performing push-ups, which are done sometimes for exercise, sometimes as punishment, sometimes as a demonstration of strength, and perhaps other purposes.[31] To put it the other way around, a typical issuer of the general instructions for doing a push-up expects of the addressee nothing beyond, but also nothing less than, taking the performance of the push-up as an objective, whether for exercise, punishment, or whatever. And yet one may have excellent reasons for following the instructions. (The modifier 'nothing less than' is important—one may achieve the aim of the instructions for bread-making in ways other than following the instructions, for example by purchasing bread; not so for push-ups.)

One might worry, then, that *all* instructions are of this sort. Could we say that *all* instructions are self-directed, but typically followed instrumentally, for some downstream purpose? Perhaps, for example, the instructions for baking bread should be understood *merely* as instructions for manipulating various ingredients and culinary implements in specified manners, instructions that one carries out, typically but not necessarily, for the purpose of producing bread. However, there is no obvious or compelling reason to adopt this kind of revisionism about instructions in general—authors of cookbooks do not compose instructions for manipulating ingredients and culinary implements in various ways; they compose instructions for making bread and spaghetti bolognese and so on. Some (perhaps most) instructions have some canonical aim that is not merely that the instructions be followed. I fail to achieve the *aim* of the instructions for breaking bread if I do not have a loaf of bread at the end.[32]

31. That push-ups are often done for exercise is probably obvious. That they are often done for punishment or correction is perhaps less well known to typical readers of philosophy journals. The (U.S.) Department of the Army (2020: ch. 4, section 6.b(1)) is clear that push-ups may be imposed on a soldier to "correct deficiencies" such as "arriving late to formation". In these cases, exercise is at best a downstream aim. What is common to both punitive and calisthenic reasons for doing pushups is just that the correct bodily motions, as given in the instructions, are performed.

32. Typically, following instructions does not infallibly produce their aims; certain (not completely specifiable) ceteris paribus clauses must always be in effect. The instructions for bak-

Conversely, one may suppose that apparently self-directed instructions are like homonyms—they *appear* to be univocal but are in fact 'instructions for doing push-ups as exercise', 'instructions for doing push-ups as punishment', and so on. But this proposal is equally at odds with normal usage, in which both the army recruit who missed inspection and the body-builder are following the 'instructions for doing push-ups', that is, instructions whose canonical, per se, aim is that the instructions be followed, although they do so for different downstream purposes.

One of the main proposals of this section is that instructions associated with performance, including musical performance, ought to be understood as self-directed (even if one typically follows them in order to achieve further objectives, such as practice, entertainment, or aesthetic expression). Indeed, much as in the case of push-ups, it seems that the purpose that is common to all of the normal reasons that one might have for following musical instructions is just that the instructions are followed. As an extreme case, consider not just practice, but *silent* practice (as when an organist practices with the bellows turned off)—in that case, even the sounds typically associated with following the instructions are absent, and yet we might plausibly say that the instructions are followed.[33] In any case, the production of sound is not part of the organist's immediate purpose, even though the organist (plausibly) 'follows the instructions' of the notation. (Of course the organist who practices silently will typically have the downstream objective of eventually following the instructions in a manner that leads to producing sounds, typically in the context of performance; still, the *immediate* objective is to follow certain instructions, the following of which seemingly does not require that any sounds are produced—but see note 33. Nor *must* it be that the organist has the downstream objective of producing sound; sometimes we practice a piece simply to develop technique, or for the fun of it, or to understand something about what performing the piece would involve.)

This notion that musical instructions are self-directed might help to answer, or defuse, questions about performance that have sometimes seemed pressing.[34] If a musician 'plays through' Liszt's *Piano Sonata in B Minor* in the privacy of her practice room, did she 'perform' the piece? And what if she plays it for what she takes to be an audience when there is none? Or what if (improbable as it is) she plays exactly the notes of that piece by accident, as it were, in the course of noo-

ing bread do not (typically) include, for example, the directive to "make sure that nobody floods the oven."

33. It is my inclination to say that they are, but one could maintain that the instructions are to 'make such and such a sounds in such and such a manner'. I prefer to understand them as 'take such and such actions' (actions that characteristically but not necessarily cause certain sounds). There are considerations in favor of both accounts.

34. For reviews, see Kania and Gracyk (2013), Thom (2021).

dling on her instrument? We may observe that the self-directed instructions of the piece were followed in the first two cases, without the second-order objective of presenting the piece to others in the first case, and with that goal, but frustrated, in the second case. Nothing appears to be seriously at stake in calling one of these activities 'performance' and the other not—it is sufficient that we have a theoretical framework for characterizing and thus understanding what is going on in each case. The third case *does* seem to be a case of non-performance, and the idea that scores prescribe musical pieces by conveying self-directed instructions captures this judgment, for in that case, she did not follow the instructions, because although she performed the relevant actions (conceived as 'playing the notes'), she did not take the aim of the instructions as her objective—one cannot adopt as one's objective that certain instructions be followed if one is unaware of the instructions in the first place. Note, further, that if the aim of the instructions were (contrary to their being self-directed) 'that such and such pitches be sounded' or 'that such and such sonic structure be tokened', then it becomes less clear why the third case is not a case of following the instructions, inasmuch as our pianist *could* (albeit improbably) adopt those aims in the course of her noodling.

Another potentially positive consequence of the proposal (that the musical instructions conveyed by notation are self-directed) relates to the conveyance of instructions by ostension. Earlier we noted two ways it can occur: by pointing to the activity of following the instruction, or by pointing to the aim of the instruction. In the case of self-directed instructions, this distinction disappears, a fact that might help explain how one can teach an appropriately trained person a piece of music by playing it—one is putting on display both the playing of it, and the instructions for playing it.[35]

By means of considerations such as the preceding, *Instructional Meaning* together with a detailed account of the nature of instructions (some preliminary consideration towards which has just occurred) may give rise to a rich framework potentially descriptive of, or even explanatory of, a range of musical phenomena. That potential is an argument for at least taking the view seriously, and seeking its further elaboration, a goal whose completion is far beyond the scope of this essay (though it is hoped that some successful gesturing in directions of

35. I see this dual aspect of performance (as putting on display both the aim of instructions and the activity of following those instructions, which are the same thing considered from different viewpoints) as connected to Walton's (2011: 470) idea that musical performances naturally invite listeners to "make music our own," in the sense of imagining it as somehow being produced by ourselves, and expressing our own emotions. The point is that in the case of musical performance, the audience has access to the productive activity, and thus, perhaps, the possibility (or the more readily accessible possibility) of imagining that activity to be one's own. (An anonymous referee has questioned this connection, wondering whether witnessing a performance could enable the kind of activity that Walton had in mind, but we are already in a parenthetical remark in a footnote, so I'll leave the matter there.)

further elaboration has occurred). We leave those matters where they stand and conclude this section with a more focused positive argument in favor of *Instructional Meaning*, and a response to a recent criticism of it.

That argument must be prefaced, however, with an acknowledgment that (engraving of) musical notation need not, and presumably does not, *always* convey instructions. This softening of *Instructional Meaning* should come as no surprise. The word 'house' is normally and characteristically denotative, indicating a house, but can be *used* as a command ('get into the house') or a question ('is it in the house?'). The latter types of usage are in a sense derivative—they depend on the primary denotative usage—but they are not for that reason denotative; they are imperative and interrogative *uses* of a word that is *normally and characteristically* used denotatively. Plausible versions of *Instructional Meaning* must acknowledge this type of phenomenon with musical notation as well, and thus at most claim that the *primary* meaning of musical notation is instructional, but that notation can be used and understood to convey other types of meaning.

Indeed, one can imagine a further softening of the view. Perhaps musical notation sometimes expresses instructions, sometimes denotes a sonic structure, and so on (for whatever other kinds of meaning one might attribute to notation), with no single usage being 'primary' in the sense of the previous paragraph. But given that these usages are clearly related—they are like the related uses of the word 'house' and not like the unrelated uses of the word 'bank' (as financial institution or riverside)—the hypothesis that they are related in virtue of being derived from a single, primary, use is at least theoretically attractive, for reasons of simplicity and economy of explanation.

Hence there are weaker and stronger versions of *Instructional Meaning*, the latter implying that when notation is used to represent, for example, a 'sonic structure' (whatever one might mean by that term), it does so in virtue of a primary imperative (instructional) meaning, so that reference (via notation) to a sonic structure is unpacked as 'the sonic structure that results from following these instructions'. Similarly for other uses. In what follows, the stronger version is the one taken to be at issue, although similar arguments apply to the weaker version.

One objection to *Instructional Meaning* is that some musical notation affords ready inference to sonic structure, directly and not elliptically (by way instructional meaning). Ruta (2019: 351), specifically, notes that one can readily ascertain certain properties (such as being in C minor) "by looking at the notes written in the score, not by imagining what would have been the effect of performing certain actions," a point that he takes to cast serious doubt on *Instructional Meaning*.

There is no real trouble for *Instructional Meaning*, here. The ease with which such inferences are afforded by a notation is orthogonal to the type of content the notation conveys. Consider, for example, the difference between the choreographic notation of the Renaissance, which consisted of letters taken from the

names of dance moves, and the later 17th century French notation found in Feuillet (1701), which consists of diagrams tracing the motions of the feet on the floor. Certain features of the dance associated with these later diagrams are quite evident from the images themselves, or at any rate are so once one understands the notation, while similar features of dances notated in the earlier Renaissance notation may be far from evident in the notation itself. It remains an open question whether these notations denote instructions or something else, perhaps 'a pattern of bodily motion' (parallel to 'a sonic structure').[36] A similar point holds about different orthographic notations for spoken words and inferences about rhyme.[37]

Let us turn, finally, to sketch a positive argument for *Instructional Meaning*. The main point of the argument is that instructions have the right kind of open-endedness, flexibility, and context-dependence to make sense of the uses of notation, and typical evaluations of those uses (for example, the evaluation of performances of musical pieces). For concreteness, we shall put the point in terms of the performance of scores, but other uses for notation (such as for practice, for transcription, for analysis, and so on) could be considered, in a similar fashion.

We begin with the observation (or contention, if one prefers) that whether a particular performance is an instance of a musical piece can be vague,[38] potentially (and sometimes actually[39]) controversial, or context-dependent. Is a performance of Bach's Goldberg variations (written for a two-manual harpsichord) on a modern piano a 'genuine performance' of the piece? What about on a Moog synthesizer, with different timbres used for the different lines of counterpoint (Carlos 1968)? What about Radiohead songs played in the manner of

36. Here we need to acknowledge additional arguments in Ruta (2019) to the effect that *Instructional Meaning* does not even get off the ground. Ruta delineates several objections (directed specifically to the composites that are scores). However, the objections crucially ignore the point, discussed earlier, that instructions may be formulated at various levels of generality, depending on the intended addressee. Hence, for example, Ruta's (2019: 350) observation that "musical scores for no instruments can be composed . . . , and such scores are playable and make sense" is of course true, but no more problematic than the observation that the instruction "set the oven to 180" can be intended simultaneously for, and successfully followed on, very different types of oven, even types unanticipated by the author of the instructions.

37. Does 'off' rhyme with 'cough'? Does 'weight' rhyme with 'height'? Standard English spelling does not make the answers clear. The International Phonetic Alphabet is much better for this purpose.

38. Goodman (1968: 148ff) claimed differently, decreeing that notation is 'unambiguous', but he was more or less pressed into this view by other commitments, and this claim has been the most widely criticized aspect of his account. (Even friends of Goodman's general view are inclined to modify it to avoid this consequence—see Predelli 1999.)

39. Ridley (2003) contends that such controversies are rare or non-existent, but he accepts that scores leave their (correct) performances underspecified at least in the sense that we might need to make such judgments post hoc, and having done so, effectively modify our understanding of the piece, and what its performances may be like. This much indeterminacy is sufficient to make the point at stake here.

classical piano (O'Riley 2005)? Or The Tokens' (1961) doo-wop recording ("The Lion Sleeps Tonight") of Solomon Linda' s (1939) decidedly non-doo-wop song "Mbube"? These and many other examples, easily multiplied, suggest that there is often no easy answer to the question, or that the answer is context-dependent. Indeed, the most plausible response is that 'the question' is not well-defined: One needs to hear more about the context of performance, and especially the practices within which those performances (or recordings of them) occur and are disseminated, and *then*, perhaps, we can assess whether they are genuinely performances of the pieces in question.

The main point is that if the pieces in question are properly understood as prescribed by the instructions for performing them (which may be encoded in notation, but need not be—I can, and probably would, instruct you in how to play Radiohead's song "No Surprises" without recourse to musical symbols, which is also, likely, how the band learned it), then vagueness, contentiousness, and context-dependence make sense, because instructions themselves have those characteristics. They are interpreted within a practice, the norms and aims of which in essence 'complete' otherwise incomplete or indeterminant instructional meaning. The point here is vaguely Wittgensteinian—no matter how precisely we may *attempt* to specify 'what to do', we will always leave something unspecified, and whether a given action satisfies a given instructional specification will ultimately be decided, at least in part, by what is taken to do so by practitioners. *Instructional Meaning* thus naturally explains the flexibility, contentiousness, and context-dependence of such judgments.

How can sonicism (the view that scores denote 'sonic structures') account for this phenomenon? The answer seems to come down to whether (on that view) scores denote sonic structures univocally.

If univocally, then whether a performance conforms to the sonic structure of a piece, and hence the score, is settled; any indeterminacy is only a matter of our failure to be able to judge the match between the sounds produced in performance and those of the sonic structure. Apparent context-dependance is illusory. Whether Carlos (1968) is a performance of Bach's piece comes down to whether the sonic structure specified by Bach's score includes certain facts about timbre, or perhaps the etiology of the sounds. One can of course take this hard-line position (as Goodman apparently did), but it does a poor job of explaining what those who (with their audiences) *take themselves* (but allegedly fail) to perform the pieces are doing. We are forced to conclude that they are mistaken, leaving us less with an understanding of their musical practice than a dismissal of it, and plunging us towards what Taruskin (1995: 76), in connection with certain strands of the 'authentic performance movement' (a particular version of the hard-line position), called "positivistic purgatory, literalistic and dehumanizing, a thing of taboos and shalt-nots."

Perhaps, then, one should adopt a 'soft' view of scores and say that they denote sonic structures vaguely, or ambiguously? There is no space here to pursue that option in detail,[40] but, briefly, we may ask, in that case, how one comes to judge, or learn, which sonic structures count as instances, for in that case, there will be many concrete sonic events that are denoted by the score. How does one get from the score to the sonic structures that it denotes or permits, vaguely or ambiguously, and how is vagueness or ambiguity introduced in the first place? The most straightforward answer is that we appeal to the sonic structures that *musicians generate* in their genuine attempts to play in accordance with the score. Such attempts always occur, as Kivy (1993: 56) says, "under a given set of implicit conventions for interpreting the score—conventions which may be quite different in different historical contexts," which nicely explains the 'softness' of the soft view of scores. But then, even if one thinks, with Kivy, that scores *do* somehow 'pick out' (vaguely, sets of) sonic structures, they do so (as Kivy himself seems to agree) in virtue of their denoting performing instructions. The competing notion, that scores directly denote a set (or perhaps a fuzzy set?) of sonic structures compatible with the score, and that performers somehow 'pick out which one to instantiate' is an entirely implausible account of what performers are actually doing, as Kivy (2002: 232) points out in his consideration of figured bass notation, when the instruction in the score is, in essence, to exercise (constrained) freedom. It is implausible because it attributes implausible cognitive powers and processes to performers, requiring them somehow to infer from the score (and not by considering how they might perform the score, but by grasping the sonic structures 'directly, but vaguely, denoted' by the score) a set of possibilities (if not an actual infinity, potentially a large number) and to alight upon one of them. In short, the most plausible manner in which scores denote sonic structures (if and when they are taken to do so) is *via* how those scores might be performed—performance practice tells us which sonic structures (whatever we might mean by such a thing) are denoted by scores.

The preceding considerations do not, of course, close the question, but they do weigh heavily in favor of *Instructional Meaning*. To maintain its prima facie viability as a view of notation, let us finish by addressing a loose end,[41] mentioned earlier, namely, that there are musical pieces, encoded by 'scores' of a kind,[42] that are constructed to be impossible, either literally (for example, logi-

40. Clarifying this position would require taking a stand on several issues regarding vagueness (or ambiguity) that cannot be spelled out here. See Sorensen (2022).

41. Thanks to an anonymous referee for raising this point and pointing me to work on unperformable works.

42. It is telling that typical examples are encoded linguistically, either entirely or partially. Musical notation, having been developed to be performable, does not easily admit expression of impossibilities on its own.

cally) or effectively, to perform. One might worry, then, that the scores for these pieces cannot possibly convey instructions.

Cray (2016: 70) provides this example, among others:[43]

> ***Tribute to I.F. Kilmister***: three musicians each, individually and simultaneously, play a single note (on electric guitar, electric bass, and drum kit, respectively) louder than the other two play their notes.

Note that in this example, and in all of the others cited or constructed by Cray, the piece in question is explicitly given in terms of instructions to the performer. Indeed, something like that observation seems to inform Cray's argument that these pieces are, in fact, 'for performance' even though they are, in fact, unperformable. This conclusion seems correct. Indeed, if we were to understand the scores in question as denoting sonic structures, it seems the only option is an empty structure, the 'null structure', if one likes (because no actual sonic events could instantiate the 'structure' allegedly described by the score). It is difficult to see why the various ways of specifying a null structure illustrated in Cray's various examples would be of interest to anybody, or why they would be taken to be interestingly different, if in the end their only purpose is to pick out a (i.e, the same, null) sonic structure. But if we understand the scores as instructions, then their impossibility, potential interest, and individual characters become clearer. 'Tribute' is specifically *funny* (as Cray 2016: 72 says) in part because of how one might imagine performers attempting (though of course failing) to follow the instructions. In contrast, there is simply nothing (apart from a 'null structure') to be the object of one's imagination of three sounds, each louder than the others. In short: pieces intended to be unperformable are of interest (if they are) precisely *because* their scores convey instructions rather than denote (null) sonic structures.

Why does any of the preceding matter?[44] Apart from the intrinsic interest (if any) of the question of what sort of meaning notation bears, the account might matter for broader questions about music. The issue of performance was already briefly discussed. More generally, the position defended here may shed light on (or cast in a particular light) the so-called 'performative turn' as it has manifested in musicology,[45] broadly, as a shift away from the idea that musicology seeks

43. Some of Cray's examples involve impossibilities (such as traveling backwards in time) that have nothing to do with music, and I would say are easily dismissed, or at least less interesting for present purposes, on those grounds.

44. I am grateful to an anonymous referee who, rightly, continued to press me to say something on this matter.

45. Musicology, perhaps even more than philosophy, is rife with hand-wringing about its self-conception; declarations of 'turns' of various kinds are frequent, and frequently taken to hail the end of the discipline. (For a recent, and perhaps somewhat extreme example, see Amico 2020.) Nonetheless, the so-called 'performative turn' in musicology was a positive development, putting

"to arrive at the Urtext . . . , in essence, a notated text" the performance of which is "the reproduction of a meaning that is already in the notes" (Cook 2008: 58), to the idea that "meaning . . . is something that emerges in the course of performance" (Cook 2013:10). One motivation of the present account is to unify these two conceptions of musical scores, musical pieces, and musical performances, as they relate to meaning—if the strong version of *Instructional Meaning* is true, then these allegedly distinct understandings of meaning are in fact the same. In particular, to analyze a score in terms of how it is performed is just to analyze the score.

4. Conclusion

This essay has been necessarily exploratory, but it is, perhaps, at least plausible, now, that the notational scheme, together with *Instructional Meaning*, satisfies the desiderata of Section 2. In the same way that words such as 'house' may be used to represent meanings other than denoting houses, but *in virtue* of the latter, paradigmatic, meaning, so also musical notation can be used to express meanings other than instructions (e.g., denoting sonic structures), but in virtue of the latter (*Diverse Uses*). The account also appears to have no problem with the existence of diverse notational systems, and especially systems such as tablature for fretted instruments, that appear to depict instructions iconically. According to the present point of view, the composites of engravings in these various systems are all doing more or less the same thing, namely, conveying instructions, albeit in different ways (*Diverse Systems*).

Moreover, because instructions can be expressed in a variety of manners (linguistically, symbolically, iconically, ostensionally, etc.) there is no mystery about how non-notational instructions interact seamlessly with notational content (*Extra-notational Interaction*). Even the *non*-instructional elements of composites (for example, what we called 'biographical' elements of composites) make sense—as has been emphasized, the interpretation of instructions is highly context-dependent, and the information provided by such elements of a composite may be crucial to set the context of interpretation.

The context-dependence of instructions explains how and why musical notation is so closely tied to practice (*Entanglement with Practices*). The present account thus takes seriously Davies's (2020: 5) helpful suggestion to pursue "ontologies sensitive to musical practices (and their historical contingencies)." *Instructional Meaning* is sensitive to musical practices because instructions are inherently tied

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the analysis of performance in proper relation to the analysis of 'works', while not (necessarily) forgetting the importance of the latter.

to a practice of interpretation—what it *means* to satisfy a given instruction is tied to a community of practice.[46]

Finally, here is a speculation, taking *Instructional Meaning* in a different ontological direction (also with an eye towards Davies's suggestion): What if we followed the following simple (even, admittedly, simplistic) line of reasoning? Musical scores represent musical pieces (a claim not previously mentioned here, but also not outlandish). Musical scores express instructions. Therefore, musical pieces are instructions. Many of the advantages mentioned above for *Instructional Meaning* are *also* advantages for this 'ontology' of musical pieces.[47] Consider for example the standard lists of 'facts that ontologies of musical pieces must respect'[48]—that musical pieces are created, that they have instances, that what counts as an instance may be a highly contextual and practice-dependent fact, and so on. If notation operates in the manner described here, and if musical pieces are instructions, then many of these alleged facts about musical pieces may have a natural explanation.

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46. One of the important lessons from Davies's (2001) discussion of notation is that we should keep clear the distinction between interpreting scores (as composites of musical symbols) and interpreting musical pieces. (Inasmuch as pieces may be represented by scores, the two are connected, but nonetheless should be kept analytically distinct.) At no point in this essay is the issue of interpreting pieces in play—all interpretation discussed here is interpretation of notation. Of course there are interesting (but unexplored, here) connections between the two.

47. Why the scare-quote? A statement such as "musical pieces are instructions" might not be taken as 'ontological' in the sense intended by many ontologists. Perhaps it is 'higher-level ontology' (Kania 2008) as opposed to 'fundamental ontology'.

48. For an example of such a list, see Killin (2018: 271). No claim is being made, here, about the authority of any such list.

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