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HARMONIA

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The Journal of the Graduate Association of
Musicologists und Theorists at the
University of North Texas

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The membership of GAMuT would like to extend its sincere appreciation to Dr. Peter Mondelli, Dr. Catherine Ragland, and Dr. Stephen Slottow for their service as faculty reviewers for this volume of *Harmonia*.

Congratulations to David Huff, whose paper "Representation and Analysis of Electroacoustic Music" was the winner of the 2012–2013 Graham H. Phipps Paper Award.

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Representation and Analysis of Electroacoustic Music

DAVID HUFF

Throughout history various means of visually representing music have been developed. Transmission and preservation were the primary reasons for creating methods of visual representation of music, but an additional benefit of visual representation is in the realm of analysis. As music is a temporal art, a musical representation allows one to examine musical ideas outside of a temporal context.[1] This ability to abstract musical ideas outside of a real-time performance has made an easier task of analyzing music, and the score has become an indispensable tool of the analyst.

The analysis of electroacoustic music revitalizes the problem of musical representation. Electronics and especially computers offer the ability to more flexibly manipulate the four musical parameters of pitch, duration, intensity, and timbre. Traditional scores typically contain visual representations describing incremental values of most of these parameters, with only approximations of timbral content through instrumentation and orchestration. With electroacoustic music these parameters can be manipulated in more finely tuned gradations allowing musical parameters to be continuously variable.[2] This increased precision and variability leads to the problem of adequately representing the music in a visual format that is capable of rendering the type of clarity found within the traditional music score.

Several models of representation have been applied to electroacoustic music, each with varying degrees of usefulness to analysis. Realization scores, parametric graphs, spectrographic analysis, graphic interpretations, and software realizations are all means of representing electroacoustic music. Each of these models has advantages and disadvantages, which is why recent scholarly work in the area of electroacoustic music analysis has tended to use a blend of techniques.[3] Roger B. Dannenberg offers a helpful frame for the range of possible techniques:

> It is convenient to think of musical representations at different levels, ranging from the highly symbolic and abstract level denoted by printed music to the nonsymbolic

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[1] Marco Stroppa, "The Analysis of Electronic Music," *Contemporary Music Review* 1, no. 1 (1984): 180.
[2] Bruno Bossis, "The Analysis of Electroacoustic Music: From Sources to Invariants," *Organised Sound* 11, no. 2 (2006): 107–8.
[3] Mary Simoni, introduction to *Analytical Methods of Electroacoustic Music*, ed. Mary Simoni (New York: Routledge, 2006), 8.

and concrete level of an audio signal.[4]

Thus one can imagine a continuum along which an array of representation techniques may exist ranging from the abstract to the concrete. Following Charles Seeger's definitions the extremes of this continuum are *prescriptive representation*, or "a blue-print of how a specific piece of music shall be made to sound," and *descriptive representation*, or "a report of how a specific performance of [a piece of music] actually did sound."[5]

A prescriptive representation would include any kind of standard music notation made for the purpose of performance but can also include instructions in the form of text or a graphic that imparts values for particular parameters for use in some electronic music system. A descriptive representation would include a transcription in standard music notation that attempts to capture nuances of a particular performance with as much precision as possible, or it could be a digitally generated graphic such as a time-domain waveform or a frequency-domain spectrograph. A third mode of representation that may exist at various points along the continuum is *analytical representation,* the purpose of which is to provide a visual depiction of the music that can in some way reveal its structural elements. Examples of this type may include a Schenkerian analytical graph or some type of "listening schema" containing graphical abstractions meant to represent sound events.[6] The techniques discussed in this paper fall somewhere along the continuum between prescription and description with certain examples also found within the analytical model. The following contains an explanation of the criteria used to evaluate representational techniques of electroacoustic music, a brief overview and evaluation of the techniques themselves, and a proposal for a generalized software environment to aid in analyzing electroacoustic works.

Techniques of Representation: Criteria

The techniques under examination all have advantages and disadvantages as analytical aids. Criteria are needed to judge the effectiveness of a particular technique of representation. The three criteria I will use are *generality*, *readability*, and *playability*. *Generality* refers to the ability of a representation to apply to a wide range of electroacoustic repertory. An effective representation is able to depict elements and features that are found in different styles and periods of electroacoustic music, elements that Bruno Bossis

[4] Roger B. Dannenberg, "Music Representation Issues, Techniques, and Systems," *Computer Music Journal* 17, no. 3 (1993): 20.
[5] Charles Seeger, "Prescriptive and Descriptive Music-Writing," *The Musical Quarterly* 44, no. 2 (1958): 184.
[6] Bossis, 104.

calls "invariants."[7] These include the typical musical elements of pitch, duration, intensity, and timbre, but also encompass aspects of sound design such as signal processing and sound generation parameters. Without extensions of traditional notation it is difficult to represent an electroacoustic work because of the range of extended techniques, materials, and technologies that are usually part of the style. However, a highly general representation will need to take into account, as far as possible, the array of materials and techniques associated with electroacoustic music without becoming tethered to any one type of technology or system used to render the music. Musical representations that cling too rigidly to particular hardware or software risk becoming outdated unless they contain information that reflects fundamental concepts that can be realized in any future system.

Readability is the extent to which a visual representation correlates to the experience of a piece. This may include depictions of events in such a way that hierarchy and structure become evident from studying the score. Thus a coherent symbolic scheme is necessary for a readable representation. Similarity and repetition should be depicted among events so that patterns among surface-level gestures are as evident as large-scale structures. A consistent visual language is invaluable in aiding the analyst to follow the moment-by-moment events as well as gain a picture of the overall form. Readability is perhaps the most difficult criterion partly because analysis is necessary to design a readable representation in the first place. In creating a representation that is readable the analyst must necessarily impose his or her own interpretation of the work on the future analysts who may use that representation in their own analytical work. Thus care must be taken and a balance of sorts should be struck between abstraction and concretization in representing musical events in a readable way.

Playability is determined by how interactive a representation can be for the user. A score in standard music notation is interactive in the sense that someone with sufficient skill with a musical instrument can play the score as written or in some modified fashion as in the instance of a pianist playing from a multi-instrumental score. The ability to interact in a similar way with scores of electroacoustic music is elusive because the techniques and materials are so often outside the bounds of traditional instruments. Most analysts will not have the ability to step into a music studio equipped with tape machines to run through their own realization of an electroacoustic work. The advent of affordable and convenient sound recording media has alleviated this problem to some degree. Sound recordings allow the analyst to play back a piece, skip directly to sections, and play sections out of order. Frequency analysis, editing, and filtering tools allow one to isolate the spectra of certain

[7] Bossis, 111–12.

sections of a recording to hear sound events in a new way. But even with these important technological tools, true interaction with the music remains elusive. Simultaneous control is needed over as many aspects of the score as possible. This criterion is most often neglected in musical representations and it plays an important role in the electroacoustic music software environment that will be proposed later.

Representing Electroacoustic Music

The first technique of representing electroacoustic music is known as a *realization score* or a *technical score*. These documents are usually some form of schematic or list of operational data that guides the reader through the steps of creating the piece.[8] If the work is a mixture of electronic and acoustic sources there may be a combination of standard notation for the acoustic instruments and an instruction manual for executing the electronic portions. Examples include the scores of Karlheinz Stockhausen's *Studie II* and Gottfried Michael König's *Essay*, both examples of early *elektronische Musik* composed at the WDR studio in Cologne during the 1950s. The score of König's *Essay* in particular contains a comprehensive documentation of the materials, techniques, and structure of the work in what amounts to a text-based instruction manual for realizing *Essay*. The score gives the primary types of sounds used (sine waves, impulses, and noise) and lists various transformations between each type that occur in the piece. Then the formal structure is accounted for by giving sections of tape length corresponding to each formal section. [9] Realization scores such as that of *Essay* usually have a high level of generality because most of the given parameters are fundamental enough to work in any environment, from a tape studio to a laptop computer. Certain elements may require translation to port from one system to another. For instance, many early works for tape (such as *Essay* and *Studie II*) measure time in terms of lengths of tape, and so conversions into standard time measurements are desirable to aid in an analysis when using such a realization score with modern technology. For the purpose of musical analysis, realization scores are essentially unreadable. The realization score can contain explicit outlines of formal sections, but no sense of events in time can truly be gleaned from such a static representation. It is also probably the least playable of any of the techniques under scrutiny by itself, but it can prove to be an invaluable aid to the software realization technique that will be discussed later.

Parametric graphs are visual representations that usually consist of a timeline with shapes or lines that define values for

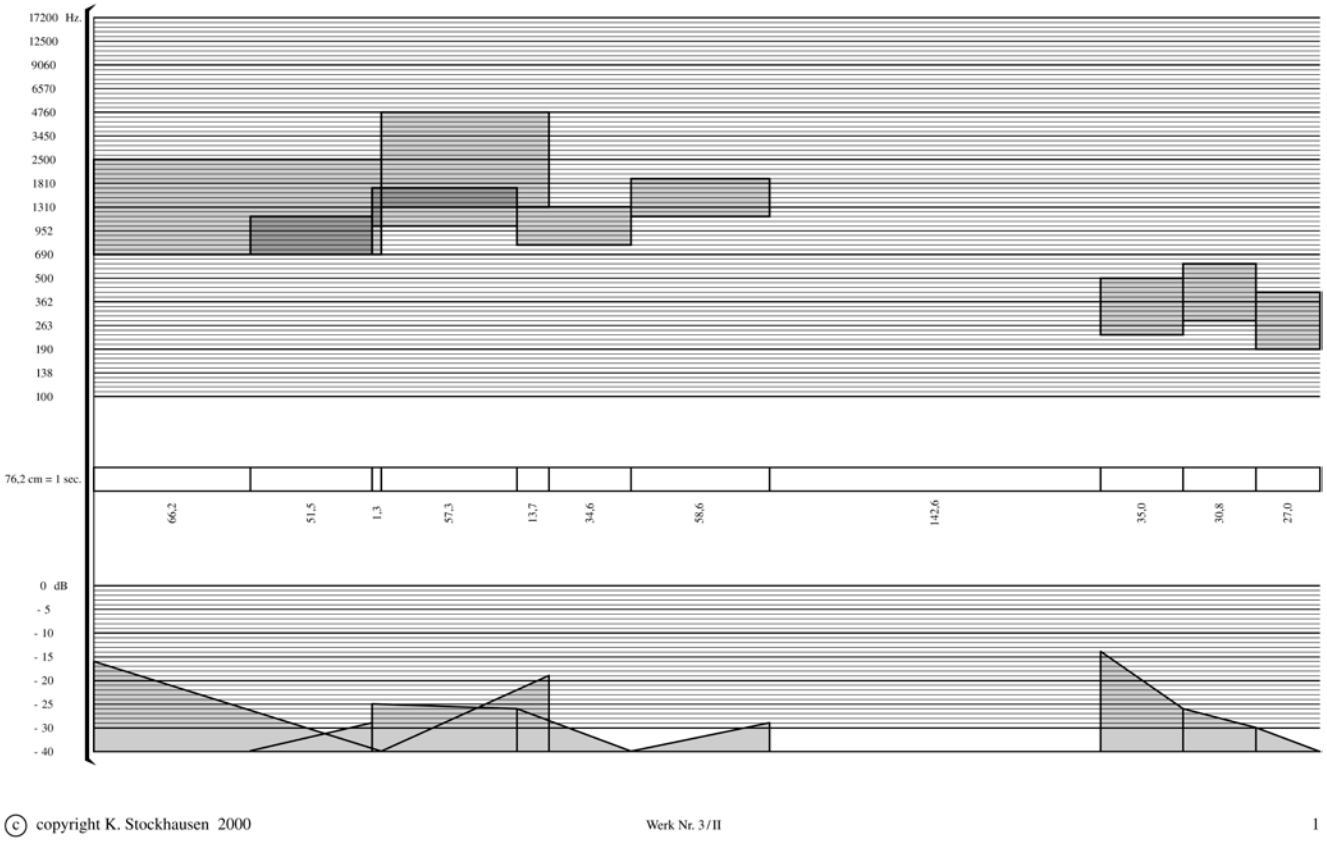
[8] Stroppa, 177.
[9] Gottfried Michael König, *Essay: Composition for Electronic Sounds* (Vienna: Universal Edition, 1960).

parameters within whatever electronic system is used to realize the electroacoustic work. Perhaps the best-known example of this technique is the score to Stockhausen's *Studie II* (ex. 1), which contains both realization instructions and parametric graphics. The score's parameters are duration, amplitude, and frequency. Duration is represented in tape lengths, while geometrical shapes represent amplitude and frequency. The lengths of the shapes depict the duration of events and the heights depict the values of amplitude or frequency of the events.[10] Because of the fundamental nature of the represented parameters this type of parametric graph is highly applicable to a range of electroacoustic works; duration, frequency, and amplitude are elements of music and sound in general that will continue to be relevant. The readability of a parametric graph is greater than that of the realization score because it explicitly follows the dimension of time. Spatial representations of musical parameters like ascending and descending lines for increasing and decreasing frequency and amplitude are easy to grasp. Similar shapes may even be compared and catalogued to observe formal relationships. The level of readability remains only moderate, however: as the number of parameters that apply to any one event increases, it becomes harder to interpret events as singular entities. Interactivity suffers for the same reason, but the visual aspect of the parametric graph adds a necessary temporal aspect to make it a more playable representation.

Other representation techniques consist of drawn or digitally-rendered *graphic transcriptions*. This technique is distinct from the parametric graphic in that it does not depict representations of precise values corresponding to musical parameters. Instead it represents general sound events as abstract shapes that roughly correspond to dimensions of duration, frequency, and intensity but may also depict other processes or even combinations of process. Probably the most famous example of this technique applied to electroacoustic music is Rainer Wehinger's listening score of György Ligeti's *Artikulation*. The score is a highly abstract collage of colored shapes that correspond to gestures using sine tones, impulses, and filtered noise.[11] The abstract nature of graphic transcriptions makes their generality high since such a representation could potentially apply to any type of sound. A well-designed graphic transcription can be highly readable as evidenced by the numerous contemporary scores that use such representations as prescriptive notation for instrumental performance. The use of shapes and colors to define particular parameters or sound objects

[10] Karlheinz Stockhausen, *Studie II* (Kürten, Germany: Stockhausen-Verlag, 2000).
[11] György Ligeti, *Artikulation* (Cologne: Schott Music, 1958).

Example 1. Parametric Graphic Score of Stockhausen's *Studie II*. Used with permission.

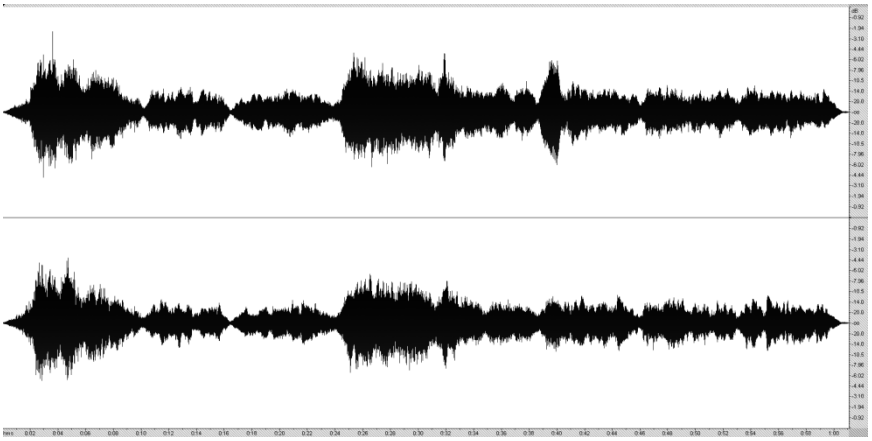


Source: Karlheinz Stockhausen, *Studie II* (Kürten, Germany: Stockhausen-Verlag, 2000).

also offers a helpful guide for exploring larger connections within a music work. A graphic transcription such as that of *Artikulation* is too imprecise to be playable—another downside of its abstract nature—but from an analytical perspective it serves as a guide to visualizing sound events.

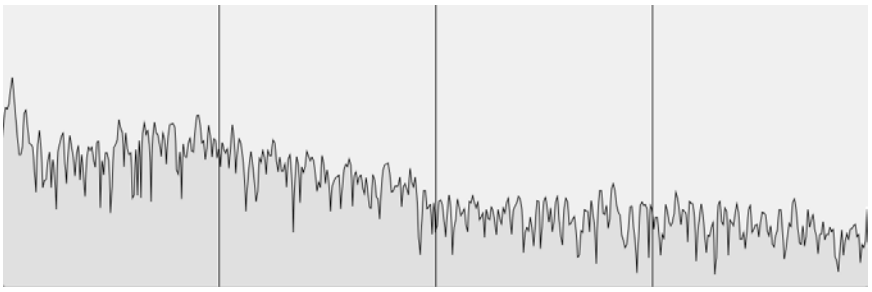
A fourth representation technique employs *audio signal visualization*. This term actually encompasses a range of techniques that have become highly accessible through the development of computer technology. *Time-domain* visualization displays a timeline with a waveform representation of the varying amplitude of some recorded performance or digitally rendered electronic work (ex. 2). The waveform display can offer some hints to the formal structure of a piece by comparing areas of high and low amplitude, but overall this visualization is limited in its usefulness as an analytical aid since the basic element of pitch or frequency is impossible to determine using it.

Example 2. A Time-Domain Audio Signal Visualization.



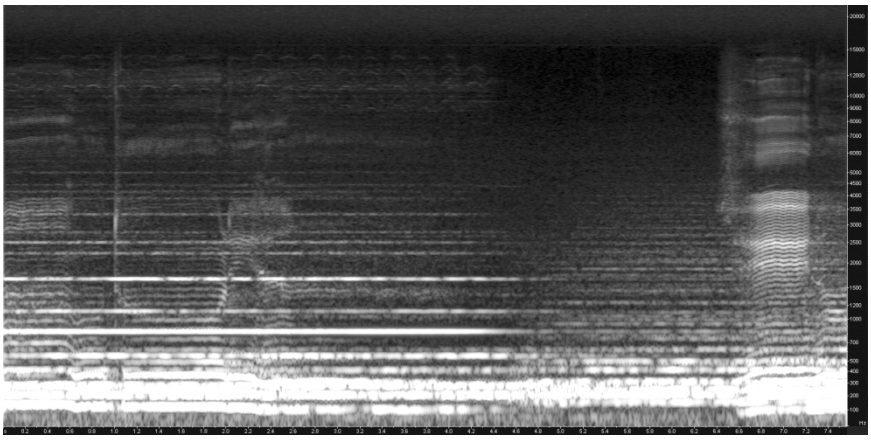
Frequency-domain visualization shows the amplitude of frequency components of audio signals as they occur in time (ex. 3). This visualization is helpful for examining the spectral content of sounds; however, the lack of a temporal dimension to the representation makes it cumbersome to trace musical events.

Example 3. Frequency-Domain Audio Signal Visualization.



Time-frequency visualization, also known as a *sonogram*, provides the best aspects of the two previous methods (ex. 4). The horizontal axis represents time, the vertical axis is frequency, and amplitude is represented by intensity of displayed brightness. With this scheme the analyst can perceive a timescale and trace events throughout it with ease.

Example 4. Time-Frequency Audio Signal Visualization.

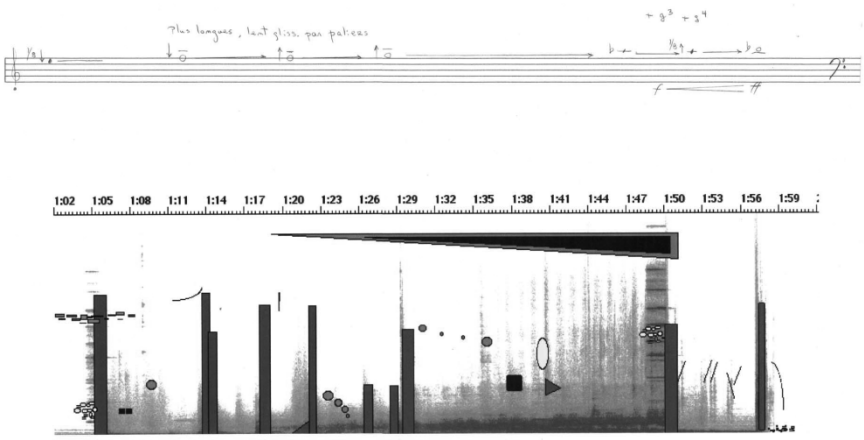


One downside is that because the sonogram depicts spectral components of sounds as separate visual entities it can be difficult to perceive the fundamental events of which they are constituent parts. The level of detail that the sonogram displays also tends to diminish playability. Having a visualization of spectral content is invaluable for analyzing the kind of timbre-based transformations that are often intrinsic to styles and genres under the umbrella of electroacoustic music. Depending on the quality of the sonogram and the training of the analyst in deciphering it, time-frequency representations can be highly readable. The time-frequency visualization technique has been used extensively for analysis with notable early contributions by Robert Cogan,[12] but has also been used in electroacoustic scores. The score to Gilles Gobeil's *La Perle et l'Oubli* (2001) for Ondes

[12] Robert Cogan, *New Images of Musical Sound* (Cambridge, Mass: Harvard University Press, 1984).

Martenot and tape makes extensive use of sonogram visualization alongside both standard music notation and graphic transcription (ex. 5). Here the notated part for Ondes Martenot is written above a sonogram image of the previously rendered tape music. Graphic annotations are then made on the sonogram presumably to highlight important events. [13] No key is given to explain the symbols and the graphics suffer from the same problems that arise in the score to *Artikulation*, but the Gobeil is a good example of how a mixture of techniques can provide a reasonably effective representation of an electroacoustic work.

Example 5. Score to Gobeil's *La Perle et l'Oubli* for Ondes Martenot and Tape. Used with permission.



Source: Gilles Gobeil, *La Perle et l'Oubli* (Montreal: YMX Media, 2001).

A final technique is the use of *software realizations* of electroacoustic music. A more recent approach than the previous techniques, software realizations aim to reproduce previously-composed electroacoustic works using modern computer technology. The nature of software development makes this a particularly amorphous category. Depending on the chosen platform and the expertise of the developer a software realization can take on any imaginable form. It is for this reason that the generality, readability, and playability of a software realization are potentially very high, but again, this is dependent on the implementation. The choice of programming environment has a great impact on how successful the realization is in terms of being an analytical aid. A few examples will illustrate some of these differences.

Software Environments for Analysis and Pedagogical Uses

Using computers to make music requires some type of software environment, and there are a multitude of options for

[13] Gilles Gobeil, *La Perle et l'Oubli* (Montreal: YMX Media, 2001).

composers these days. Commercially available Digital Audio Workstations (DAWs) offer all-in-one solutions and grant the user access to capabilities that would have required rooms full of hardware less than twenty years ago. The earliest computer music-making was done in text-based coding environments with the earliest of them, MUSIC I, being developed in the 1950s by Max Mathews while working at IBM and Bell Laboratories.[14] Many composers of electroacoustic music find that the programming descendants of MUSIC I offer more flexibility than commercial software. Csound, developed in 1985 by Barry Vercoe,[15] is one of those descendants that have been widely used in electroacoustic composition. Based on many of the same programming principles of MUSIC I, Csound is compatible with modern hardware and is freely available.

An example of a software realization of an existing electroacoustic work using Csound is Joachim Heintz's reproduction of Stockhausen's *Studie II*.[16] Heintz studied the original score as well as Stockhausen's studio sketches in order to produce the realization with the stated purpose of examining "the close correlation between serial composing and programming."[17] Thus Heintz's analytical endeavor was accomplished by tracing the steps through the creation of the piece, re-creating it as a representation in Csound code and as a fully rendered audio performance of the piece. Example 6 is a sample of code from Heintz's Csound realization of *Studie II*.

The readability of a Csound realization is mostly dependent upon how the analyst organizes the code. In the case of Heintz's realization great care has been taken to delineate between processes, but a familiarity with the programming environment would still be a necessary prerequisite for anyone attempting to trace musical events and formal structures. In many ways a Csound realization is like the realization score in that a text-based document can be hard-pressed to convey concepts like space, directionality, pitch, and duration in musically intuitive ways. Playability is nearly non-existent in a Csound score since the programming language by itself does not offer as many options for real-time control as other environments. The playback of a Csound score is often no more

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[14] Curtis Roads and Max Mathews, "Interview with Max Mathews," *Computer Music Journal* 4, no. 4 (1980): 15.

[15] Barry Vercoe, foreword to *The Csound Book* (Cambridge, Mass.: MIT Press, 2000), xxix.

[16] Joachim Heintz, Stockhausen's "Studie II" Generated in CSound [computer program] (2009), retrieved from http://joachimheintz.de/soft/popsoft_csound_stud2.html.

[17] Joachim Heintz, "Re-Generating Stockhausen's *Studie II* in Csound," (paper, Linux Audio Conference, Utretcht, The Netherlands, May 1–4, 2010), Linux Audio Conference 2010, last modified June 7, 2010, lac.linuxaudio.org/2010/papers/34.pdf.

Example 6. Example code for Joachim Heintz's Csound realization of Stockahausen's *Studie II*. Used with permission.

```
;============================================================================;
;       1. PART 1                                                            ;
;============================================================================;

;;an envelope for each note in this part (1=crescendo, 2=diminuendo)
iftenv_1   ftgen      0, 0, -75, -2,    2, 1,   1, 2, 2, 1,   2, 2, 2, 1, 2,   2, 2, 1,   2,\
                         2, 1,   1, 2, 2,   2,   1, 2, 1, 2,   2, 1, 2, 1, 2,\
                         1, 2,   1, 2, 2,   1, 2, 2, 2,   2, 1, 2, 2, 2,   1,\
                         2, 2,   2,   2, 1, 2, 2,   1, 2, 2,   1, 2, 2, 1, 2,\
                         1, 2,   2,   2, 1, 2, 1, 2,   2, 2, 1, 2,   1, 2, 2
istart_1   =      0; absolute starting time of this part
iftcounts_1    =      ift_R5; R5 defines the number of elements in each sequence
iftfreqs_1 SS2_MkParamTab_Meth1 ift_Freqs, iftcounts_1, ift_R1, 3, ift_R2, ift_R1, ift_R2, ift_R3, 1; list of all frequences
iftdurs_1  SS2_MkParamTab_Meth1 ift_Durs, iftcounts_1, ift_R3, 1, ift_R4, ift_R3, ift_R4, ift_R5, 0; list of durations
iftdb_1 SS2_MkParamTab_Meth1 ift_Intens, iftcounts_1, ift_R2, 5, ift_R3, ift_R2, ift_R3, ift_R4, 0; list of intensities
iftstarts_1    SS2_Starts_part ift_Durs, iftcounts_1, ift_R4, 1, ift_U5, ift_R4, ift_R5, ift_R1, istart_1; starting times (one per sequence)
       prints "%n%n"
;      TableDumpSimp iftfreqs_1, 0, 5
;      TableDumpSimp iftdurs_1, 0, 5
;      TableDumpSimp iftdb_1, 0, 5
;      TableDumpSimp iftstarts_1, 1, 5

       prints     "%n%nGENERATING LIST OF EVENTS PART 1 (Events as Part.Set.Sequence.Note):%n%n"
       prints     "Event%t%tStart (cm)%tStart (sec)%tDuration (cm)%tDuration (sec)%tFreqInf (Hz)%tFreqSup (Hz)%tdB1%tdB2%n"
       SS2_TrigEvents_1 iftstarts_1, iftcounts_1, iftfreqs_1, iftdurs_1, iftdb_1, iftenv_1, isubinstr, iprintlines
```

Source: Joachim Heintz, Stockhausen's "Studie II" Generated in CSound [computer program] (2009), retrieved from http://joachimheintz.de/soft/popsoft_csound_stud2.html.

interactive than listening to a pre-recorded audio file on CD or in a software audio editing program. Overall Heintz's effort may prove to support his thesis concerning the comparison of serial composition and programming, but as a representational software environment much more is needed.

Miller Puckette's Pd Repertory Project is a collection of realizations of electroacoustic pieces that were created in the Pure Data (Pd) programming language. Pd is part of a family of visual programming languages derived from Puckette's control language for the 4x synthesizer at IRCAM (Institut de Recherche et Coordination Acoustique/Musique) called Max,[18] which has evolved into a commercially available programming environment. The Max/Pd family are graphical programming environments in which the user connects pre-designed objects that each have specific functions in order to create systems for accomplishing tasks from simple math to complex signal processing, algorithmic composition, and even three dimensional graphic art. These visual programming environments have long been preferred by contemporary composers as a method of using computers to make electroacoustic music.

As Puckette explains, one of the goals of the Pd Repertory Project is preservation:

> The realizations of many of these pieces have depended on specific items of hardware or software which, while chosen for their expediency at the times of the premieres of the pieces, will eventually become impossible to find, and in some cases are already becoming scarce.[19]

Preservation is a serious problem with electroacoustic works and has been explored extensively by Simon Emmerson.[20] This is where the realization score and the software realization may meet to provide a successful tool not only for the analyst but also for those wishing to perform past works. The problem is that not all electroacoustic pieces have detailed realization scores like that of König's *Essay* and even contemporary composers do not always document the environments they use to produce electroacoustic music. As Emmerson puts it:

> A [Max/Pd] patch may work without any accompanying explanation of its structure and functions. Of course this is not needed for today's performance but may be vital for

[18] Miller Puckette, "Max at Seventeen," *Computer Music Journal* 26, no. 4 (2002): 31.
[19] Miller Puckette, "Pd Repertory Project," last modified June 24, 2007, http://crca.ucsd.edu/~msp/pdrp/latest/files/doc/.
[20] Simon Emmerson, "In What Form Can 'Live Electronic Music' Live on?," *Organised Sound* 11, no. 3 (2006): 209–19.

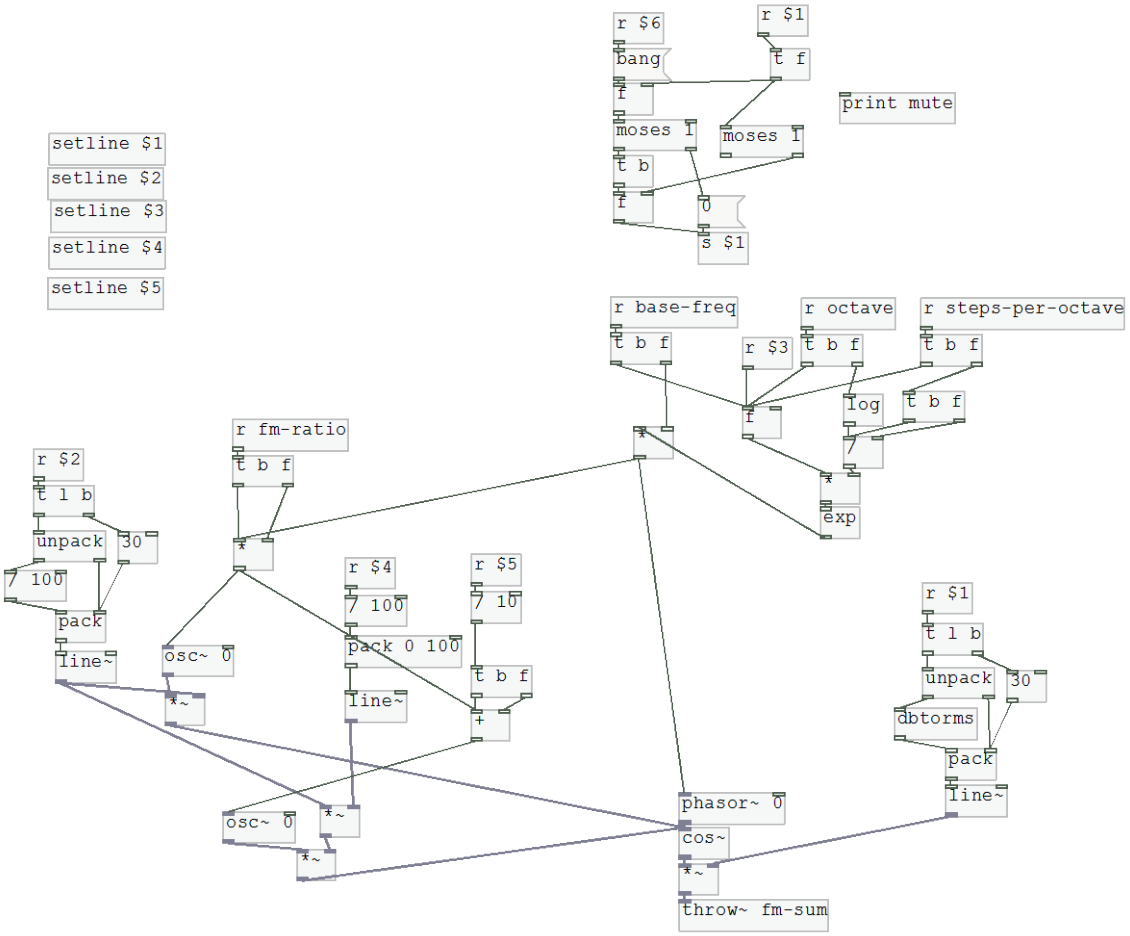
tomorrow's revival.[21]

Further exploration of the topic of preservation is outside the scope of this paper but it should suffice to mention that it is a very real concern and a potential drawback regarding the practice of producing software realizations.

An example of a realization from the Pd Repertory Project is that of John Chowning's seminal computer composition *Stria* (ex. 7). The patch lets the user start the score and hear the rendering, adjust parameters for the frequency modulation synthesis engine in real time, and even edit the score to create new events.[22] This real-time control over parameters makes this realization much more interactive than the Heintz realization of *Studie II*. The visual programming nature of Pd also makes the patch a bit more readable albeit with a similar necessity of prerequisite knowledge to decipher the code. Certain general concepts of electroacoustic music such as oscillators and filters have corresponding objects in Pd that have particular names and the user will need to be familiar with these correlations in order to be able to read the patch. The score itself is given as a "qlist," a text file with a list of events that contain parameter values and timings that are sent to the synthesis engine (ex. 8). While the structures of the synthesis engine and signal processing modules are easy enough to read (providing one knows the language), the temporality of the piece remains obscure since the only representation of it is embedded in the text-based qlist score. Playability is also limited in this realization due to the lack of control over the timeline, but it remains an important further step towards a solution for representing electroacoustic music for analysis.

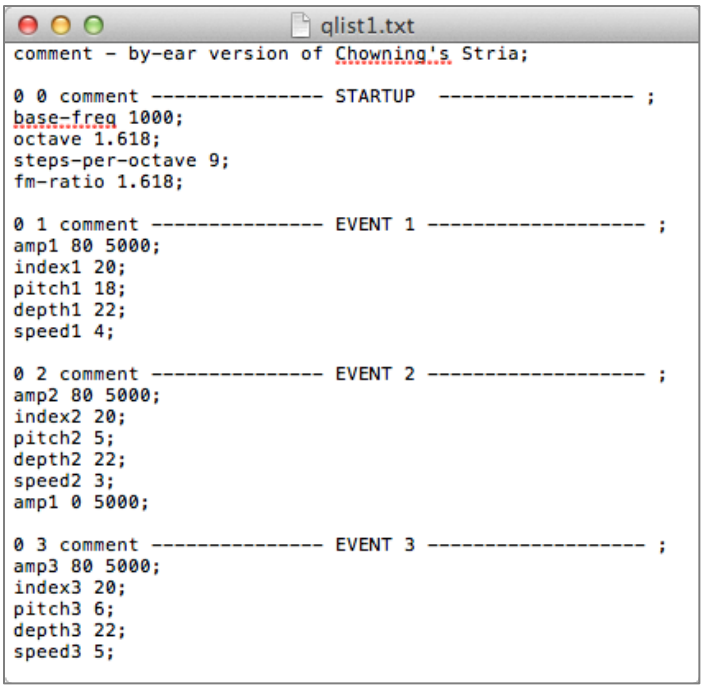
[21] Emmerson, 218.
[22] Miller Puckette, John Chowning: Stria [computer program] (2003), retrieved from http://msp.ucsd.edu/pdrp/pdrp-12/files/doc/.

Example 7. Pd patch code of the FM engine for the realization of Chowning's *Stria*. Used with permission.



Source: Miller Puckette, John Chowning: Stria [computer program] (2003), retrieved from http://msp.ucsd.edu/pdrp/pdrp-12/files/doc/.

Example 8. Qlist text file from the Pd Repertory Project realization of Chowning's *Stria*. Used with permission.



Source: Miller Puckette, John Chowning: Stria [computer program] (2003), retrieved from http://msp.ucsd.edu/pdrp/pdrp-12/files/doc/.

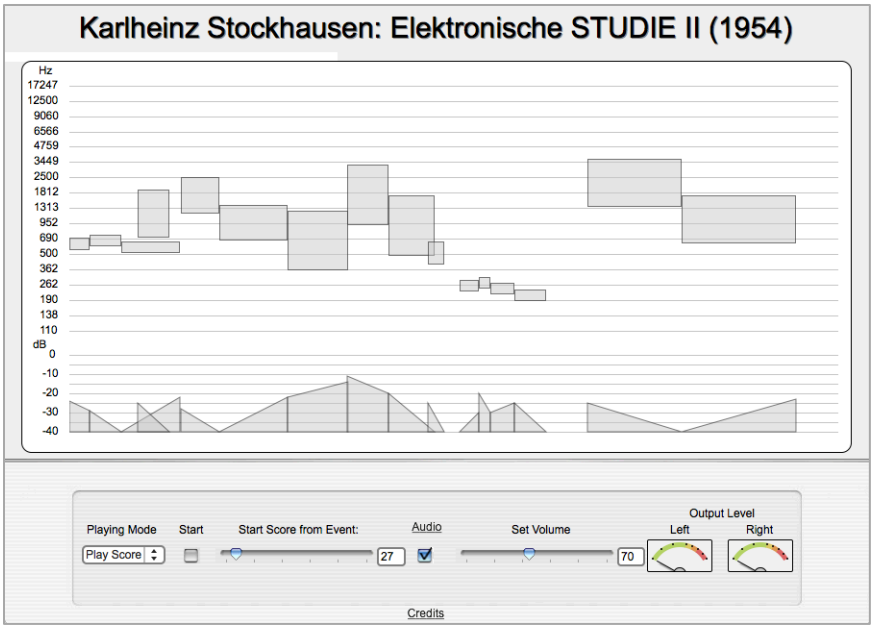
The last example is another realization of *Studie II* designed by Georg Hajdu using the Max programming language (ex. 9). Included as an example in the official Max software installation, Hajdu's patch displays an animated version of the original parametric graphic score that proceeds along with the sonic realization of it.[23] This comes closer to an ideal mode of representation than any other technique previously mentioned. As with the *Stria* realization the user can play the score from the beginning but unlike it Hajdu's patch grants control over which event is currently playing. Using a user interface slider the score can be stepped through either forward or backward, or one can jump directly to any event. This amount of control over the timeline makes this realization highly playable.

The inner workings of the patch are hidden, unlike the *Stria* patch where they are readily accessible. A fair amount of parsing is necessary to be able to view the synthesis engine but the same caveat of fluency applies to reading these segments of the patch as with the patches of the *Stria* example. The major aspect of readability comes from the animated score. The ability to see the parametric graph's events appear in sync with the sonic rendering

[23] George Hajdu, Karlheinz Stockhausen: Elektronische Studie II [computer program] (2011), retrieved from http://georghajdu.de/6-2/studie-ii.

creates a clear association between the visual representation and the sound. If such a patch were to be modified to increase the level of playability it would approach an ideal representational model for analysis.

Example 9. Stockhausen's *Studie II* realized in Max by Georg Hajdu. Used with permission.



Source: George Hajdu, Karlheinz Stockhausen: Elektronische Studie II [computer program] (2011), retrieved from http://georghajdu.de/6-2/studie-ii.

Software realization, in combination with other techniques such as graphic transcription and sonogram analysis, presents the best opportunity for continuing endeavors in electroacoustic music analysis. The sonic and interactive capabilities of this method are the driving factors because, as Mary Simoni rightly points out, a visual representation is not enough:

> Whether the musical representation consists of neumes, notes on a staff, or graphics, we are obliged to look beyond these visual artifacts and listen carefully to fully understand the music. The visual artifacts are, after all, nothing more than a means to harness the intent of some musical abstraction.[24]

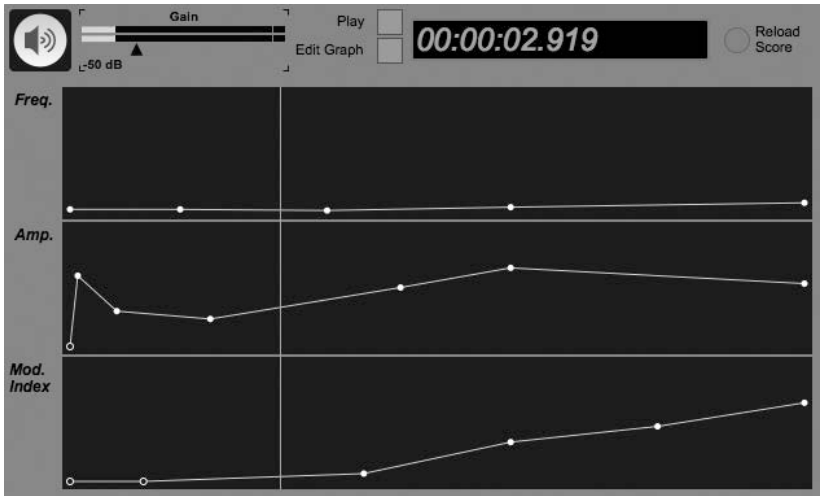
Of course a combination of some graphic representation and an audio recording offers a more robust analytical environment than a graphic alone, but the crucial element of playability remains elusive.

[24] Simoni, 1.

A software realization environment designed with interactivity in mind could prove to be an ideal solution to this problem. The final section of this paper outlines some thoughts on what elements are necessary to develop a highly interactive software environment designed to realize electroacoustic works for the purpose of study and analysis.

In analyzing a piece such as a Bach chorale the analyst will not merely look at the score alone. She will want to sit at the keyboard with the score in order to play through the piece, play it out of time, isolate particular sections, compare sections out of order, or even change some musical elements in order to demonstrate how certain features may diverge from some established norm. A generalized software realization environment can allow a level of interaction that can meet and even surpass that afforded by the traditional keyboard/score combination. In order to achieve such interaction with a software realization there must be an aspect of temporal flexibility in the design. The timing system should allow one to play back events at various speeds, to step though events out of time, and to jump to events, all the while being able to hear the events in real time. To achieve this kind of temporal flexibility a necessary component is some type of visualized timeline of events. A simple solution is to implement breakpoint function tables that correspond to parameters (essentially operating as editable parametric graphs) and are arranged concurrently to form a stratified timeline of events. A design that mimics the transport control of a tape machine is a standard user interface mechanism that contains, play, stop, rewind, and fast-forward functions as well as a counter display that shows the elapsed time in some meaningful unit such as an hour/minute/second/millisecond counter. Example 10 shows a prototype of a timeline of events corresponding to parameters of an FM synth with a simple transport function included. Underneath the visual timeline a mechanism for event scheduling is needed.

Example 10. Prototype of an interactive visual timeline for parameters.



The qlist score used in the *Stria* realization is a standard method for scheduling events and it would be an effective solution as long as it is linked to the visual timeline in such a way that changes in either the qlist file or the breakpoint function editors will update the other seamlessly.

Some necessary technical aspects of the software environment deserve mention. The breakpoint function tables can provide a visual editing scheme for the various parameters of sound generation, signal processing, routing, mixing, and global control that make up the core sound engine. Each of these parameter types can be implemented as groups of modular pieces that fit together to create the system. A suite of signal processing modules should include different types of filters, chorus, flanging, phasing, delay, and reverberation effects, as well as dynamic processing such as compression and limiting, and frequency shifting for tasks such as harmonizing. Sound generation modules would include different oscillator types like sine, square, saw, and triangle waves, additive synthesis banks, frequency modulation routing schemes, and perhaps physical modeling algorithms. Finally, routing and mixing of control and audio signals must be implemented. Control data handling forms the core of how the various parts of the system communicate with each other, while signal data are the raw audio and processing that eventually become the sound that is heard. Both of these must be implemented in a way that enables dynamic changes in real time when the need arises. All of these elements are big topics that require much technical explanation as to their purposes and implementations, which, although being outside of the scope of this paper, are necessary for a comprehensive documentation of such a proposed software environment.

There is also a pedagogical opportunity here that might otherwise be missed. In order to analyze electroacoustic music with any level of sophistication it is necessary to have some understanding of how it is created. The materials and techniques of the genre must be engaged just as the fundamentals of any other genre or style would be. When students study counterpoint in the academies they are not simply taught to analyze contrapuntal pieces but rather they are taught to write counterpoint themselves as a way of understanding the compositional process. It should be no different for electroacoustic music studies. The air of specialization surrounding the genre should be lifted and as more analysts turn toward this music the need for a pedagogy of electroacoustic music will increase. A software environment such as the one proposed above could serve a dual function as both an analytical and pedagogical tool. The modular structure of the environment allows for a design featuring similarly modular documentation. Individual concepts relating to each of the sound engine modules can be imparted through a commentary system that pervades each patch and sub-patch, thoroughly explaining even the most basic mechanics of the environment. Thus analysts and students may study the analysis alongside the details behind the technical processes in an electroacoustic piece from within the software realization.

Concluding Thoughts

The issue of representation as it pertains to electroacoustic music is essentially a question of how to replace the traditional score as an analytical aid. Ironically the very thing that made music analysis feasible in the first place—namely, a static score that allows one to draw musical abstractions outside of a temporal context—is precisely what needs to be overcome in order to reinsert a level of interactivity into representations of electroacoustic music. The methods and materials of electroacoustic music necessitate a paradigm shift in thinking about how music is represented. A combination of techniques brought together within the framework of software realization seems to be a worthwhile path to explore. Further exploration of representation techniques will contribute to the development of analytical methods aimed toward electroacoustic music.

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Music Made Visible: Balanchine Choreographs Tchaikovsky's Third Symphony

WAYLA J. CHAMBO

George Balanchine (1904–1983), founder of the New York City Ballet and the School of American Ballet, is renowned for his innovations in ballet technique and choreography, and for his great musical sensitivity. Balanchine's father was a composer, and he had a more extensive musical background than many choreographers: in addition to his dance training at the Imperial Ballet School in St. Petersburg, he also studied piano and music theory at the Conservatory of Music.[1] Balanchine used an astonishing variety of music for his ballets, ranging from Gluck to Webern, and his close collaborative relationship with Stravinsky is particularly well known. However, Tchaikovsky's music, known and loved since his childhood in Russia, held a special place in his heart.[2]

Balanchine's ballet *Jewels* (1967) uses the music of Tchaikovsky's Symphony No. 3 in D Major, op. 29, for its third section, "Diamonds." Creating choreography to an existing piece of music is distinctly different from the traditional ballet model of fitting the music to the dance, and Balanchine's choreography skillfully illuminates the structure of Tchaikovsky's music. This responsiveness to music was a key part of Balanchine's aesthetic and working method: he was known for "creating a visual analogy in space that restates the musical structure with the trained dancer's body."[3] In the case of "Diamonds," this visualization results in a performance piece that is ultimately more compelling than the symphony on its own.

In addition to holding emotional significance for Balanchine, Tchaikovsky's music also possesses qualities that lend themselves well to the dance. Tchaikovsky has long been associated with ballet

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[1] "Company History: George Balanchine," New York City Ballet, accessed November 23, 2011, http://www.nycballet.com/company/history/balanchine.html. Born in Russia, Balanchine left the Soviet Union for Europe in 1924 and immigrated to the United States in 1933. He is considered one of the foremost ballet choreographers of the modern period and is credited with developing an American style of ballet. For more extensive biographical information see Bernard Taper, *Balanchine: A Biography* (New York: Times Books, 1984) and Robert Gottlieb, *George Balanchine: The Ballet Maker* (New York: HarperCollins, 2004).

[2] Solomon Volkov, *Balanchine's Tchaikovsky: Interviews with George Balanchine,* trans. Antonina W. Bouis (New York: Simon and Schuster, 1985), 32.

[3] Don McDonough, *George Balanchine* (Boston: Twayne Publishers, 1983), 2.

music: his three ballets are among the best known and most beloved of his compositions, and dance-like elements are also present in his purely instrumental works.

Tchaikovsky's music held an important place in Balanchine's work and in his ideas about ballet. Balanchine's first performance was in Tchaikovsky's *The Sleeping Beauty,* at the age of 10. Solomon Volkov records Balanchine as saying, "Thanks to *Sleeping Beauty* I fell in love with ballet."[4] The first ballet that he created in America, *Serenade* (1935), used music from Tchaikovsky's Serenade in C, op. 48, and the official Balanchine Catalogue maintained by the George Balanchine Foundation lists 31 works using music by Tchaikovsky.[5] These are not all new ballets; the list includes Balanchine's stagings of *The Nutcracker, Swan Lake,* and excerpts from *The Sleeping Beauty.* However, the fact that Balanchine revisited these classic Tchaikovsky ballets further indicates how deeply he valued the composer's works. Balanchine also directed a Tchaikovsky Festival in 1981, which showcased not only his older pieces, but also numerous world premieres by Balanchine and other choreographers.[6] Considering all this, it is not surprising that Balanchine chose Tchaikovsky's music for the final act of *Jewels.*

Jewels is an evening-length, plotless ballet. Its three acts are entirely distinct and are sometimes performed independently. The first act, "Emeralds," uses music by Gabriel Fauré: selections from *Pelléas et Melisande* and *Shylock*. The second act, "Rubies," is set to Igor Stravinsky's *Capriccio* for piano and orchestra, and the final act, "Diamonds," to Tchaikovsky's Symphony No. 3 in D major (first movement omitted).[7] The costumes for each act, originally designed by Barbara Karinska,[8] correspond to the colors of the jewels.

According to the New York City Ballet's repertory index, and the understanding of many critics, each section evokes a different

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[4] Volkov, 31.

[5] "George Balanchine Catalogue," The George Balanchine Foundation, accessed November 23, 2011, http://balanchine.org/balanchine/search.jsp. More than 425 works are listed in the catalogue. For the sake of comparison, a search for Stravinsky (Balanchine's close collaborator) returns 40 results.

[6] "Festivals Directed by Balanchine," The George Balanchine Foundation, accessed November 23, 2011, http://balanchine.org/balanchine/festivals.jsp?p=2.

[7] "George Balanchine Catalogue."

[8] Barbara Karinska (1886–1983) was a well-known costume designer and Balanchine's choice collaborator for many years. For a brief biography, see the American Ballet Theater's online archive: "Barbara Karinska," Ballet Theatre Foundation, Inc., accessed September 19, 2013, http://www.abt.org/education/archive/designers/karinska.html. For more extensive information, see Toni Bentley, *Costumes by Karinska* (New York: H.N. Abrams, 1995).

national style of ballet associated with a city where Balanchine lived and worked.[9] "Emeralds" references Paris and the tradition of the French romantic ballet. It is graceful, elegant, and sweet. "Rubies" is playful, angular, and seductive, buzzing with energy. The choreography is more contemporary, reflecting the fast-moving character of New York and the innovations of Balanchine's work in America, including his collaboration with Stravinsky (although this piece was independently composed as instrumental music). Finally, in a return to Balanchine's roots, "Diamonds" pays homage to the Russian Imperial Ballet of St. Petersburg and the grand, classical style of Marius Petipa.[10]

Balanchine's ballets are often described as abstract, though he objected to the use of the term:

> No piece of music, no dance itself can be abstract. You hear a physical sound, humanly organized, performed by people, or you see moving before you dancers of flesh and blood in a living relation to each other. What you hear and see is completely real. But the after-image that remains with the observer may have for him the quality of an abstraction. . . . Much can be said in movement that cannot be expressed by words. Movement must be self-explanatory. If it isn't, it has failed. . . . Neither a symphony nor a fugue nor a sonata ever strikes me as being abstract. It is very real to me, very

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[9] "Repertory Index," New York City Ballet, accessed November 23, 2011, http://www.nycballet.com/company/rep.html?rep=105. See also "Jewels," The George Balanchine Trust, accessed October 8, 2013, http://balanchine.com/jewels/, which uses repertory notes adapted from the New York City Ballet. Other references include Gottlieb, 159, and Tim Scholl, *From Petipa to Balanchine: Classical Revival and the Modernization of Ballet* (London: Routledge, 1994), 128.

Nancy Goldner questions the reference to national styles, arguing that the categories of French, American, and Russian are "too general to hold water" and that it was the relationship of the choreography to the original dancers that made *Jewels* stand out. Nancy Goldner, *Balanchine Variations* (Gainesville: University Press of Florida, 2008), 91. Despite Goldner's claims, however, the associations with the Russian Imperial Ballet in "Diamonds" are too clear to be dismissed.

[10] Marius Petipa (1818–1910) became director of the Russian Imperial Ballet in 1869 and had a major influence on the Russian ballet style. Tchaikovsky's first ballet, *Swan Lake,* was originally composed for the Bolshoy Theatre in Moscow and choreographed by the balletmaster Julius Reisinger. *Swan Lake* was later revived by Petipa and Lev Ivanov in 1895. Tchaikovsky's other two ballets, *The Sleeping Beauty* and *The Nutcracker*, were composed for Petipa's company in the intervening years. *Grove Music Online*, s.v. "Ballet," accessed August 21, 2013, http://www.oxfordmusiconline.com/subscriber/article/grove/music/46700. See also Roland John Wiley, *Tchaikovsky's Ballets: Swan Lake, Sleeping Beauty, Nutcracker* (Oxford: Clarendon Press, 1985), especially xii–xiii, 2–3, 31–46. For more on Petipa's style, see Scholl, 3–14.

> concrete, though "storyless." But storyless is not abstract. Two dancers on the stage are enough material for a story; for me, they are already a story in themselves.[11]

For Balanchine, *storyless* and *abstract* are not synonymous. He is interested in "the beauty of movement, in the unfolding rhythmical patterns, and not in their possible meaning or interpretation."[12]

The beauty of movement for its own sake, disconnected from the need to tell a story, may be read as analogous to the idea of absolute music versus program music. Tchaikovsky's Third Symphony, which Balanchine chose for "Diamonds," lacks the programmatic associations of the later three symphonies and is both discussed and performed much less frequently. Balanchine may have chosen it partly because of the lack of a program, which connected to his own aesthetic sensibilities, and partly for its musical qualities. In Balanchine's view, it was "too bad that the Second and Third symphonies are rarely played. . . . The Second has a brilliant finale, and the Third, another of Tchaikovsky's marvelous waltzes, *a whole ballet scene exquisitely orchestrated* [emphasis added]."[13]

In contrast to Balanchine's praise, critical response to the Third Symphony has generally characterized it as a work of uneven quality at best. David Brown describes it as "inconsistent" and "the least satisfactory of all his [Tchaikovsky's] symphonies."[14] Martin Cooper also criticizes the Third Symphony as "the least individual, the most academic of the six."[15] According to these critics, Tchaikovsky had not yet found his mature style, and his struggle with form was less successful than in the later symphonies.

Roland John Wiley agrees that the Third is less individual than the other symphonies, but also describes it as "the least conformative to preset schemes," somewhat in contradiction to Cooper's "academic" designation.[16] Wiley points out the work's similarities to a divertimento, especially in the inner movements, and its proximity to the composition dates of Tchaikovsky's orchestral suites. The integrated logic of the final movement pulls the piece back into symphonic territory, but the overall impression of its genre remains unsettled: "more pretentious than a divertimento, less grand

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[11] George Balanchine, "Marginal Notes on the Dance," in *The Dance Has Many Faces*, ed. Walter Sorell (Cleveland: World Pub. Co., 1951), 36–37.
[12] Balanchine, "Marginal Notes," 38.
[13] Volkov, 118–119.
[14] David Brown, *The Crisis Years, 1874–1878,* vol. 2, *Tchaikovsky: A Biographical and Critical Study,* 1st American ed. (New York: Norton, 1983), 50.
[15] Martin Cooper, "The Symphonies," in *The Music of Tchaikovsky,* ed. Gerald Abraham (New York: Norton, 1946), 30.
[16] Roland John Wiley, *Tchaikovsky* (Oxford: Oxford University Press, 2009), 132.

than a symphony."[17]

This genre uncertainty calls into question the success of the symphony and at the same time contributes to its effectiveness as ballet music. Throughout "Diamonds," Balanchine's choreography reflects the music's pre-existing formal structure and responds to the problems presented by the variation between the music's "symphonic" and "balletic" qualities.[18] In the waltz and scherzo movements in particular, this results in a beautiful illumination of the music. At other moments the adaptation is less than perfectly successful; nevertheless, the very idea of fitting the dance to the music demonstrates a fundamentally different relationship between the two than that which existed in the classical ballet of Tchaikovsky's time.

In the tradition that Tchaikovsky inherited, the music was very much the servant of the dance. The balletmaster had the final say in the collaboration, and the music was meant to accompany and enhance the visual spectacle.[19] The quality known as *dansante* was of primary importance. Though not easy to define exactly, the ideal *musique dansante* possesses several key elements: it is melodious, has a regular pulse that is easy for dancers to follow, and matches the stage conditions and structural requirements of the ballet.[20] Other common characteristics of ballet music included the use of light textures, solo instruments (especially in solo variations, virtuosic episodes for one dancer), and a variety of moods and colors. The music was often broken up into short sections to fit the structure of the dances and accommodate the limits of the dancers' physical endurance.

Tchaikovsky's ballets, while still composed according to the instructions of the balletmasters,[21] represent an important development in ballet music. Tchaikovsky was acknowledged as a master of the *dansante* style, and his ballets show an exceptionally

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[17] Wiley, *Tchaikovsky,* 133.

[18] My analysis of the choreography is based on the two currently available videos of "Diamonds": the Paris National Opera Ballet's complete production of *Jewels,* and the "Diamonds" *pas de deux,* performed for a television special in 1977 by New York City Ballet dancers Suzanne Farrell and Peter Martins. George Balanchine, *Choreography by George Balanchine*, selected ballets choreographed and reconceived for television by George Balanchine, originally produced for television as part of the series "Dance in America," 1977 (New York: Nonesuch Records, 2004), DVD; and George Balanchine, *Jewels: Ballet in Three Parts*, Paris National Opera Ballet, Paris National Opera Orchestra, conducted by Paul Connelly (London: Opus Arte, 2006), DVD.

[19] Wiley, *Tchaikovsky's Ballets,* 2–5.

[20] Wiley, *Tchaikovsky's Ballets,* 6–7. See also Wiley, *Tchaikovsky,* 136.

[21] See n. 10 for a discussion of the origins of Tchaikovsky's ballets *Swan Lake*, *The Sleeping Beauty*, and *The Nutcracker*.

vivid use of color and texture, complementing his melodic gifts. However, Tchaikovsky also used key schemes and recurring themes to create more musical continuity than was typically found in earlier ballet scores; this is especially evident in *The Sleeping Beauty,* but can be heard even in his first ballet, *Swan Lake*.[22] The music was still serving the dance, but the relationship was more equal than in the past.

In the twentieth century, ballets choreographed to previously existing music became more common than those using newly composed scores.[23] Balanchine was emphatic about respecting the music and objected to thinking of it only as a background or soundtrack: "To me, it's music that wants you to do certain things. Dance has to look like the music. If you use music simply as an accompaniment, then you don't hear it. I occupy myself with how not to interfere with the music."[24]

Balanchine also had definite ideas about what he was looking for in danceable music, with a sense of time and rhythm primary among them.[25] He expected "a steady and reassuring pulse which holds the work together and which one should feel even in the rests. . . . The secret for an adequate rendering of the musical score into visualization lies in the dynamic use of silence and in the utmost consciousness of time."[26] Balanchine was looking for ways to make the music visible, and his view of the *dansante* was less concerned with melody and accompaniment than the traditional definition. However, he did not find all music suitable for dancing. Notably, he said that he could not choreograph a Brahms or Beethoven symphony: "perhaps little moments from a specific piece. But you can't take one of their symphonies and dance to it."[27] In Balanchine's view, however, Tchaikovsky's Third Symphony *is* danceable; the music translates more easily to the stage in part because of its lack of perfect conformity to the Germanic symphonic model.

"Diamonds" uses all the movements of the symphony except the first. According to the New York City Ballet's repertory index, "Balanchine . . . decided to omit the symphony's first movement, deeming it unsuitable for dancing."[28] This first movement, an allegro

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[22] *Grove Music Online*, s.v. "Tchaikovsky, Pyotr Il′yich," accessed November 23, 2011, http://www.oxfordmusiconline.com/subscriber/article/grove/music/51766pg3.
[23] *Grove Music Online*, s.v. "Ballet."
[24] Jonathan Cott, "Two Talks with George Balanchine," in *Portrait of Mr. B: Photographs of George Balanchine* (New York: Viking Press, 1984), 135.
[25] Stephanie Jordan, "Music Puts a Time Corset on the Dance," *Dance Chronicle* 16, no. 3 (1993): 295.
[26] Balanchine, "Marginal Notes," 39–40.
[27] Cott, 134.
[28] "Diamonds," New York City Ballet repertory index, accessed August 29, 2013, http://www.nycballet.com/ballets/d/"Diamonds"-(from

in sonata form with a slow introduction, is the most traditionally "symphonic" of the work—the most similar to the Brahms and Beethoven models that Balanchine claimed were not danceable. It is long and motivically dense, with an extended and emphatic coda. This movement may be less suited for dancing because of the greater density of its motivic development. In general, Balanchine's choreography manages to embody musical gesture and phrasing without resorting to slavish literalism (such as following every beat and change of tessitura).[29] When the development of the music is carried out on the small scale of motive, rather than the larger canvas of melody, such variation may be more difficult to visualize.[30]

Instead, the ballet opens with the second movement, *Alla tedesca,* the one Balanchine described as "a whole ballet scene exquisitely orchestrated."[31] This is the "extra" fifth movement of the symphony, essentially an additional scherzo inserted before the slow movement. The *Alla tedesca* is cast in a large ABA form, with a waltz (in B-flat major), a trio (in G minor), then a return of the waltz and a coda. The trio features light, sparkling triplets that contrast with the lilting waltz theme. When the waltz returns, there is a deftly wrought eight measures of overlap between the two characters: the high strings continue the triplets, while the bassoon reintroduces the waltz melody, doubled by the cello. (See ex. 1.)

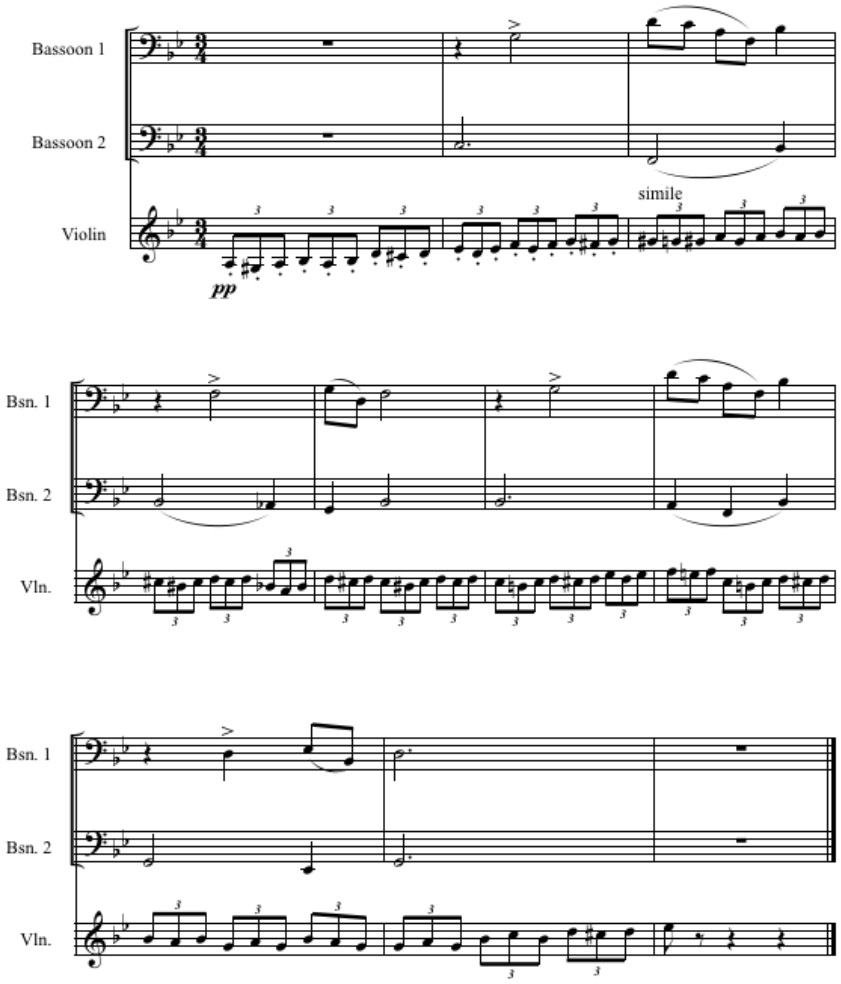
-jewels).aspx.

[29] See Jordan, "Time Corset," for a discussion of Balanchine's sophisticated use of hypermeasure and polymeter.

[30] The first movement is also the longest of the symphony, generally between thirteen and fifteen minutes in performance, and practical considerations about the length of the ballet may also have come into play in the decision.

[31] Volkov, 119.

Example 1. Tchaikovsky, Symphony No. 3, mvt. 2, mm. 153–first beat of 162 (bassoons and first violins).



Balanchine's choreography follows the music's formal structure, making it visible for the audience. The movement begins with an ensemble of twelve female dancers; two female soloists enter when the trio begins, and exit just as the trio music blends back into the return of the waltz theme. (See ex. 1.) The soloists return once more in the coda, again corresponding with a structural point in the music.

Tchaikovsky changes to a lighter scoring for this second movement, with prominent solo woodwinds; the horns are the only brass, while the first movement also used trumpets, trombones, and tuba, in addition to timpani. The graceful waltz melody and regular rhythm, the lighter texture and the use of solo instruments are all features of this movement that fit within the *dansante* style.

The third movement, *Andante elegiaco,* features a lush and

elegant flow of melody, by turns pastoral and impassioned; Brown describes this movement as "the symphony's true heart."[32] It retains some elements of *dansante* style cited above: the orchestration remains light, with bassoon and horn featured as soloists. At the same time, it is longer and denser than typical ballet music.[33] The distinction between symphonic and balletic qualities is less clear here than in the other movements.

The *Andante* is choreographed as a majestic *pas de deux,* the heart of the ballet as well as of the symphony. Melody is a more prominent quality than rhythm in this movement; it still provides a regular beat, but there is greater temporal flexibility than in the fast movements. As Stephanie Jordan notes, there were exceptions to Balanchine's insistence on rhythmic drive, with the music of Tchaikovsky as a primary example.[34] He encouraged his dancers to develop a sophisticated sense of musicality and rubato,[35] which is clearly evident in the *pas de deux.* Dancer Barbara Walczak recalls this expressive responsiveness to music as a key part of Balanchine's teaching: "The dancer was another musician. But instead of creating sound, the dancer became visible sound."[36]

The choreography of this movement also illustrates Balanchine's claim that "two dancers on the stage are enough material for a story."[37] Although there is no plot, the dance implies a wealth of emotional resonance, echoing the traditional *pas de deux* as a love duet but with hints of melancholy underlying it, as suggested by the elegiac quality of the music. There is also an element of pursuit that might be read as coyness or as something more complex; at times the female dancer seems to be trying to escape, though she always allows herself to be caught again, and the two finish the duet together, with the man kneeling and kissing her hand. The haunting triplet figure from the introduction returns at the end of the movement, again passed from bassoon to horn and accompanied by pizzicato strings, but this theme is now moved into D major instead of D minor by the change of the last note from F-natural to F-sharp. This transition into the major key accompanies the reconciliation of the lovers at the end of the dance. (See ex. 2a and 2b for a comparison of these two passages.)

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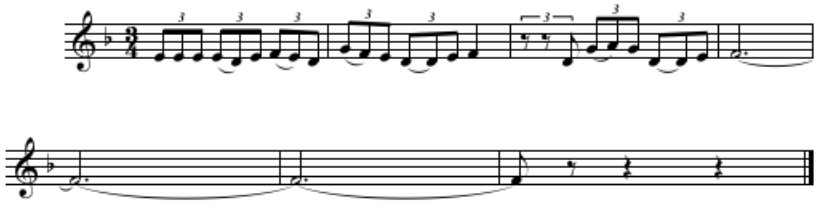
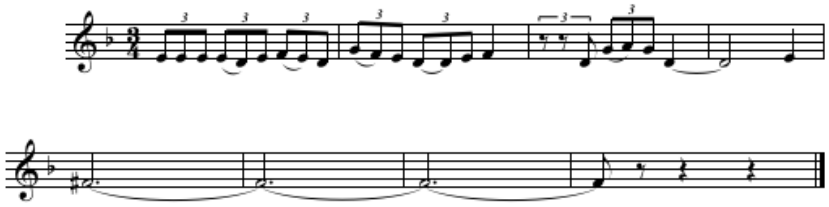
[32] David Brown, "Russia Before the Revolution," in *A Guide to the Symphony,* ed. Robert Layton (Oxford: Oxford University Press, 1995), 272.
[33] See Goldner, 99, and Robert Garis, *Following Balanchine* (New Haven: Yale University Press, 1995), 181–2, for comments on the unusual length of the "Diamonds" *pas de deux.*
[34] Jordan, 296.
[35] Jordan, 318.
[36] Barbara Walczak and Una Kai, *Balanchine the Teacher: Fundamentals That Shaped the First Generation of New York City Ballet Dancers* (Gainesville: University Press of Florida, 2008), 302.
[37] Balanchine, "Marginal Notes," 37.

Example 2a. Tchaikovsky, Symphony No. 3, mvt. 3, mm. 28–34, horn (shown in concert pitch).



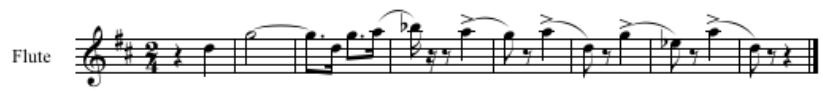
Example 2b. Tchaikovsky, Symphony No. 3, mvt. 3, mm. 175–182, horn (shown in concert pitch).



In a classical *pas de deux,* the slow duet would typically be followed by short, virtuosic solo variations for the male and female dancers. In this case, because the structure of the pre-existing music does not follow this format, the dance is adapted to the musical form. The solo variations are instead interpolated into the following movement, again in a fashion that illustrates the musical structure: a scherzo and trio with a coda. The vivid colors and rapidly moving lines, with quick exchanges between different instruments, lend themselves well to dance in this movement and recall the type of music that often accompanies solo variations in classical ballets.

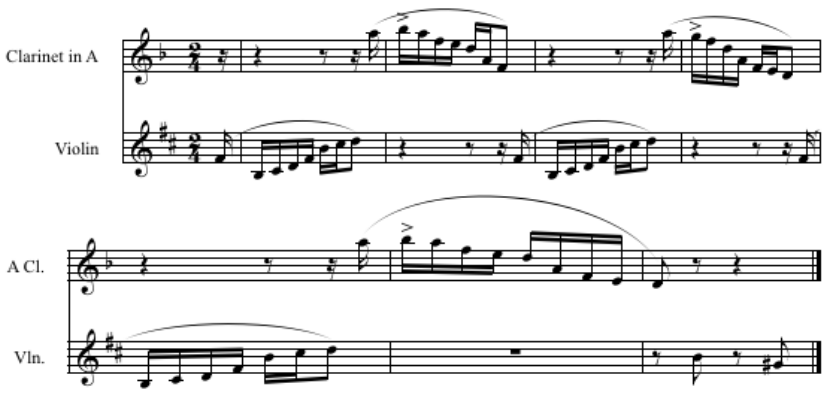
The choreography of the *Scherzo* opens with a *pas de quatre,* four female dancers swirling along with the playful, interlocking sixteenth notes passed throughout the orchestra. The male soloist enters at the beginning of the trio, accompanied by a more strongly rhythmic theme with regular accents on the second beat. (See ex. 3.)

Example 3. Tchaikovsky, Symphony No. 3, mvt. 4, mm. 138–145: Trio theme (first flute).



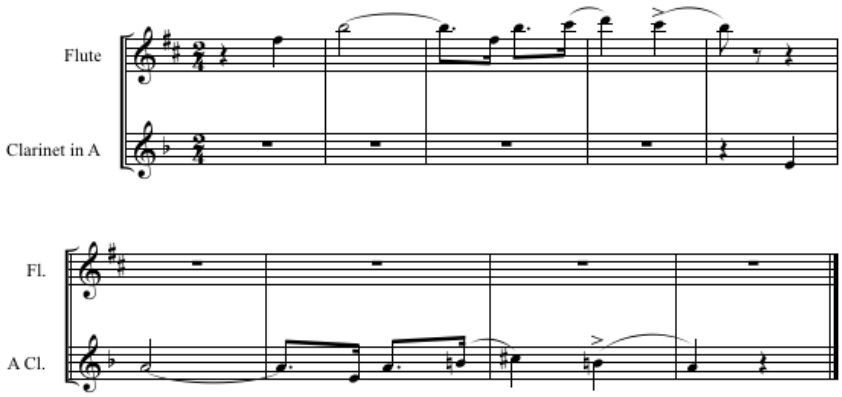
His solo, featuring typically virtuosic jumps and turns, is interspersed with the four demi-solo couples. With the return of the scherzo music the female soloist enters for her variation. (See ex. 4.)

Example 4. Tchaikovsky, Symphony No. 3, mvt. 4, mm. 264–270: Scherzo return (first clarinet and first violins).



Following her solo, the man returns briefly to the stage as the trio theme is echoed in the coda. (See ex. 5.)

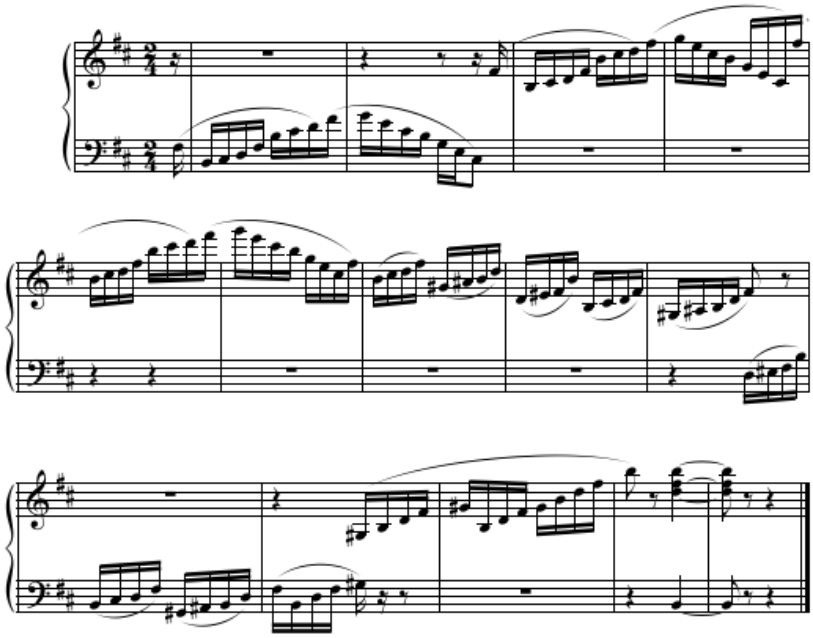
Example 5. Tchaikovsky, Symphony No. 3, mvt. 4, mm. 397–first beat of 405: Coda, Trio theme (first flute and first clarinet).



Finally, the woman finishes the movement along with the sixteenth-

note figure that accompanied her earlier solo. (See ex. 6.)

Example 6. Tchaikovsky, Symphony No. 3, mvt. 4, mm. 426–439: End of coda (reduction showing sixteenth-note figures only).



Throughout the *Scherzo,* the choreography effectively makes the music visible in both structural and gestural terms. Balanchine has adapted the *pas de deux* form to fit with the music over the course of these two movements (the *Andante* and the *Scherzo*) in a way that appears both logical and organic, while still retaining enough tension to hold an audience's interest.

In the final movement, the adaptation of the dance to the musical form produces a less satisfying result. The fifth movement is a rondo based on a polonaise theme (the source of the symphony's nickname, "the Polish"). The choreography starts strongly, with the men and women entering in two parallel lines in a procession that recalls the grand, courtly dance of the polonaise and the closing *grand divertissement* of classical ballets such as *The Sleeping Beauty.* Primarily an ensemble piece, it is also interspersed with duo sections and features the soloists against the background of the *corps de ballet.* The fugue beginning at measure 177 is echoed with a canon in the dance, and there is a striking section of unison choreography near the end. However, it simply seems to go on too long, losing momentum as the coda continues.

It is not immediately apparent whether this loss of energy is the fault of the choreographer, of the composer, or of a less felicitous match between the two. This is the movement that Brown finds the

least musically successful of the symphony: "The orchestration, like the music itself, is thoroughly competent and equally unremarkable. The polonaise-mannered refrain of this rondo movement is partnered by two episodic themes, the first a particularly dreary tune which recurs, after an arid fugato, to usher in the badly overblown coda."[38] This judgment may be overly harsh on some counts; the polonaise theme is grand and celebratory, and the movement is not entirely without impact and excitement. However, it does become quite repetitive, without much rhythmic variation, and the coda is overly long and insistent. The final movement's length, weight, and motivic density, without the changes of character for dance variations, make it more challenging to render into choreography.

A clue to Balanchine's reasons for including this movement when he omitted the first may be found in the overall structure of the ballet. As the final act of *Jewels,* "Diamonds" closes the entire evening-length ballet, and references the Petipa tradition in its scale and structure as well as in the choice of music and choreographic style. It uses the largest cast of the three acts and emphasizes ensemble work in addition to the soloists. Ending with the scherzo movement would have been insubstantial; a grander finale was needed, echoing the classical *divertissement* and *ballet à grand spectacle.*[39] Unfortunately, in this case the result, while emphatic, is somewhat belabored.

Overall, however, the marriage of music and dance is remarkably effective. Balanchine emphasized the importance of Petipa's influence on the choreography of "Diamonds," saying, "It's not me. It's pure Petipa."[40] When compared to the other acts of *Jewels,* particularly the jazzy and angular "Rubies," "Diamonds" is definitely closer to Petipa's classical style.[41] However, there are still some distinctively Balanchine elements in the dance movements, which mark the ballet as his own and distinguish it from older classical dance techniques: for example, the distinct articulation of the hands and fingers, including the use of flexed wrists, and the off-balance partnering in the *pas de deux.*[42] "Diamonds" may be an homage to the St. Petersburg of Petipa and Tchaikovsky, a distillation of its essence, but it is Balanchine's own creation at the same time.

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[38] Brown, *Crisis Years,* 42–43.
[39] *Grove Music Online*, s.v. "Ballet."
[40] Merrill Brockway, liner notes, *Choreography by George Balanchine*, selected ballets choreographed and reconceived for television by George Balanchine, originally produced for television as part of the series "Dance in America," 1977 (New York: Nonesuch Records, 2004), DVD.
[41] See n. 10 for sources that discuss Petipa's style.
[42] Suki Schorer, *Suki Schorer on Balanchine Technique* (New York: A.A. Knopf, 1999), 145–46, 274, 394–95, and 404–06. For an additional detailed resource on Balanchine technique, see Barbara Walczak and Una Kai, *Balanchine the Teacher*.

Similarly, the ballet "Diamonds" takes an existing work, the Third Symphony, and makes it an integral part of a new creation. Even though both the symphony and the ballet are plotless, the music still serves a narrative function in relationship to the dance, suggesting emotions, adding color and contrast in a way that might be deemed theatrical, and illustrating Balanchine's idea that "storyless is not abstract."[43]

It is tempting to conclude simplistically that the more "symphonic" movements (the first and last) are less successful as ballet music, while the more "balletic" movements (the middle three) work better with the dance. However, this claim requires further examination. The relative distribution of symphonic and balletic qualities is not the only factor in determining the effectiveness of the music as part of the ballet.

As discussed above, critics have frequently noted the Third Symphony's unevenness and lack of genre stability. While Tchaikovsky does create some thematic connections between movements, the distinct contrast between the inner and outer movements is even more pronounced than in the later symphonies, and the outer, more symphonic movements are less thoroughly integrated into Tchaikovsky's own musical voice. The first and last movements are similar in their extended length and greater orchestral and motivic density. Both suffer from repetition without much rhythmic variation and from overly long codas. The middle three movements feature balletic techniques such as lighter scoring, woodwind solos, and skillful use of orchestral color. Brown argues that the outer movements are the least successful, demonstrating Tchaikovsky's struggle to force his ideas into the symphonic model, while the inner three movements, more freely composed, are stronger and more convincing.[44]

The two outer movements, which are the most symphonic, are also the least musically compelling. The first is omitted from the ballet altogether, and the last is the weakest point of the production (though the dance still adds interest and excitement, compared to the music alone). Movements II and IV are clearly balletic in style and Balanchine translates them into engaging choreography.

The third movement presents a more complicated question. Its length and scope make it more unusual for ballet music, and it is in some ways the strongest portion of the symphony. This movement occupies an interesting middle ground: it is neither completely symphonic, nor completely balletic. Balanchine plays off of this tension between tradition and departure with remarkable effect. The

[43] Balanchine, "Marginal Notes," 36.
[44] Brown, *Crisis Years,* 50. See also Brown, *Tchaikovsky: The Man and His Music,* 102–105.

Andante is enchanting as stand-alone music, and Balanchine also renders it into a gorgeous *pas de deux* that combines an "abstraction and amplification of adagio" with "a distillation of the dramatic imagery of nineteenth-century ballet."[45]

This reconsideration leads to a more nuanced version of the conclusion posited above: the music that more effectively demonstrates Tchaikovsky's musical voice also works better for the ballet. The inner movements translate more easily into dance not only because of their balletic qualities but also because they are more successful in purely musical terms.

As a complete work, the ballet creates a stronger impact than the symphony. In making the music visible, Balanchine's choreography both emphasizes its strengths and camouflages some of its weaknesses; it enhances the music, drawing on its *dansante* elements, adding continuity through the movements, and illustrating the structure in a compelling visual display. While the Third Symphony on its own is uneven and not quite mature, "Diamonds" is a cohesive and elegant work that enjoys a well-earned prominence among Balanchine's ballets.

[45] Garis, 182.

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Shostakovich's Subversive Retelling of Leskov's *Lady Macbeth*

EMILY HAGEN

Despite its initial success, Shostakovich's *Lady Macbeth of Mtsensk* has been a controversial work since it was denounced in the 1936 *Pravda* articles.[1] The primary accusations critics have leveled against this opera have been based on perceived musical shortcomings or the offensiveness of its sexually explicit subject matter. Judith Kuhn provides a summary of the musical epithets that were aimed at Shostakovich's first two operas, which were "condemned as modernistic, cacophonous, dissonant, grotesque, primitive, naturalistic (read 'sexually explicit'), subjective, expressionistic, unmelodic, pessimistic and inaccessible to the people."[2] Although the musical naturalism of *Lady Macbeth* is striking, it is surprising that more criticism was directed at the music than at Shostakovich's presentation of the murderous Katerina Izmailova as an intensely human and sympathetic character.

Shostakovich based his libretto on a short story by Nikolai Leskov. These two works present the same set of characters and the same plotline, but with vastly different results. Leskov's Katerina is a heartless murderess motivated only by her own desires, whereas Shostakovich develops Katerina into an unhappy young woman who acts to defend her own happiness and sense of self from the repressive institutions that govern her society. The fact remains, however, that both protagonists commit several murders. How does Shostakovich gain the audience's sympathy for this murderous Katerina while maintaining her innate selfishness and carnal desires? The answer lies in both the libretto and the music. Caryl Emerson has identified several ways in which, by making minor alterations to Leskov's characters, omitting certain plot events, and using music to enhance characterization, Shostakovich and librettist Alexander Preis transform Katerina into the story's most human character and the victim of her society's repressive institutions.[3] Richard Taruskin also explores Shostakovich's careful manipulation of plot and character to produce what he calls "a colossal moral

[1] The articles "Muddle Instead of Music" and "Balletic Falsity" attacking Shostakovich's work appeared in the prominent newspaper *Pravda* in 1936 on January 28 and February 6, respectively. Authorship of these articles cannot be established definitively.

[2] Judith Kuhn, *Shostakovich in Dialogue* (Farnham: Ashgate, 2010), 7.

[3] See Caryl Emerson, "Shostakovich and the Russian Literary Tradition," in *Shostakovich and His World*, ed. Laurel E. Fay (Princeton: Princeton University Press, 2004), 196–226, and "Back to the Future: Shostakovich's Revision of Leskov's 'Lady Macbeth of Mtsensk District,'" *Cambridge Opera Journal* 1 (March 1989): 59–78.

inversion."[4] Their ideas are briefly summarized here in order to provide an understanding of scholarly ideas on this topic. Yet this is only the beginning; additional changes to the story together with musical characterization of minor characters play a larger role in this process than has been recognized heretofore, and a close examination of these factors contributes valuable evidence to further advance Emerson's interpretation.[5]

Although the libretto alters a significant number of details, the basic plot outlines of the novel and the opera are identical. Katerina Izmailova, the young bride of Zinovy Borisych, lives under the iron rule of her domineering father-in-law, Boris. She copes with the living situation as best she can until the aggressive attentions of Sergei, one of her husband's employees, awaken her to the nature of genuine passion. She immediately becomes completely dissatisfied with her life and takes Sergei as a lover. When Zinovy returns from a business trip to find the lovers together, Sergei and Katerina kill him and hide his body in the cellar. Shortly thereafter, Boris discovers the love affair and begins to hint that he suspects Katerina of killing Zinovy. While serving Boris's dinner, Katerina poisons his food and avoids suspicion by claiming that eating mushrooms at night can often prove fatal. She inherits the family business, and with no further obstacles to their love, she and Sergei prepare to marry. Unfortunately, at the wedding, the body of Zinovy is discovered and the lovers are condemned. Later, while they are prison inmates on a forced march, Sergei proves unfaithful, and he and his new lover taunt Katerina unmercifully, though Katerina retains her faithful love for Sergei. She meets her end when, pushed too far by mockery, she grabs Sergei's new lover and drags her into a nearly frozen lake. Both women drown in the scuffle.

To understand the ways that Shostakovich achieves a complete reinterpretation of Leskov's heroine despite the retention of these plot elements that appear to condemn her, one must consider a number of changes to detailed character and plot elements that work together to present her sympathetically. It seems most logical to consider these elements in the order that they were introduced during the compositional process. First, Shostakovich made many smaller changes to the story in the process of creating

[4] See Richard Taruskin, *Defining Russia Musically* (Princeton: Princeton University Press, 2004), 498–502.

[5] Along with Emerson, Richard Taruskin and Rosamund Bartlett remark on the humanizing influence of lyricism in Katerina's vocal lines. Their ideas will be summarized here for the purpose of adding new examples and comparing Katerina's music to that of other characters. See Caryl Emerson, "Shostakovich and the Russian Literary Tradition;" Richard Taruskin, *Defining Russia Musically*; and Rosamund Bartlett, "Shostakovich as Opera Composer," in *The Cambridge Companion to Shostakovich*, ed. Pauline Fairclough and David Fanning (Cambridge: Cambridge University Press, 2008).

the libretto. In particular, changes in character details initiate Katerina's reinterpretation by causing the secondary male characters that surround her to appear corrupt, weak, or cruel. This process increases the audience's sense of Katerina's victimization and makes her appear less evil in contrast. Next, specific plot omissions either remove some of the darkest deeds that Leskov's heroine commits or increase her social isolation. These omissions again serve the new interpretation by making the protagonist seem less evil and by emphasizing her victimization. Finally, musical characterization works on many levels to humanize Katerina, satirize her male tormentors, and undermine social institutions (the church and the law). Through music that portrays Katerina as a human being who experiences complex emotions, she is elevated musically above her surroundings in a way that subtly suggests her moral superiority over her superficial peers. The following discussion consists of a detailed examination of each of these aspects of Shostakovich's reworking of the *Lady Macbeth* story.

The most significant alterations made to Leskov's story are changes in character details that initiate a reversal of the original Katerina's negative characterization. First, Katerina receives a more favorable introduction to the audience through the replacement of Leskov's narrator with Katerina's opening vocal solo, in which she is allowed to provide her backstory from her own perspective. This is to be expected; some omissions are generally necessary when a literary work is adapted for opera. In this case, however, Shostakovich removes the information about Katerina's past that clarified her reasons for marrying Zinovy Borisych. Katerina was married at age nineteen and saw her marriage as an opportunity to improve her socioeconomic status. However, she later realized that she had also relinquished the relative freedom that she enjoyed as the unmarried daughter of a poor family. As a child, she could run wild in the fields, dress as she pleased, and flirt with young men of her own class. This topic receives only one line in the libretto during Katerina's opening solo music: "When I was a girl, even though we were poor, at least I was free." Although the topic receives more attention in Leskov, the tone in which Leskov describes Katerina's past is very matter-of-fact and generates no sympathy. Despite the improvement in her social situation, as a merchant's wife, she becomes subject to social mores that restrict her behavior, pastimes, and mode of dress with the result that her life feels so monotonous and regimented as to be beyond her own control.[6] The new expectations placed on her in Zinovy Borisych's household, and particularly the expectation that she should bear children, become increasingly unendurable for her. Leskov describes all this in a brusque tone that suggests that this monotonous existence is simply Katerina's lot in life; she married Zinovy, and she deserves no better

[6] Nikolai Leskov, *Lady Macbeth of Mtsensk and Other Stories*, trans. David McDuff (Harmondsworth, England: Penguin, 1987), 111–12.

circumstances. These details of her backstory are omitted or merely implied in the libretto. Instead, Katerina opens the opera with a drastically shortened exposition that allows her to describe her situation from her own perspective. This short, heavily biased explanation of her plight replaces the narrator's backstory and emphasizes Katerina's suffering. Thus, from the first scenes of the libretto, Leskov's third-person narrative style and his derisive tone are replaced with Katerina's own self-expression.

The character of Zinovy Borisych undergoes more significant changes in the libretto adaptation. The most obvious change is in Zinovy's perceived age. In Leskov, Zinovy is an older man of fifty, and he has already been married once.[7] While the opera libretto describes Zinovy as "a man of middle age,"[8] his behavior and childish deference to his father suggest a much younger mental age. The vocal timbre required for this tenor role also suggests a young man closer to Katerina's own age, particularly in contrast with his father's deeper voice. Yet his weak-willed submission to others is the strongest indicator of his mental age. Zinovy's spineless obedience when his father forces him to demand vows of fidelity from Katerina in Act I Scene 1 demonstrates both his weak submission to his father and his indifference to Katerina. His behavior upon returning home and discovering Sergei with Katerina also suggests immaturity and weakness; he first hides, brooding, outside the bedroom door, then makes wheedling insinuations. When he meets with unexpected insolence from Katerina, he erupts into violence not as a mature, middle-aged man but as an adolescent who feels challenged to prove his own dominance and adulthood. This characterization does not secure the audience's sympathy for Zinovy, but rather for Katerina.

Like Zinovy, the character of Boris undergoes several changes that alter his personality. However, in Boris's case, these changes demonize him in order to present Katerina as a victim. For example, the libretto alters Boris's perceived age. Leskov's elderly man of "nearly eighty" becomes young and virile enough in the opera to consider himself a possible sexual partner for Katerina.[9] The operatic character is also strong enough to overpower Sergei without assistance. This change permits Shostakovich to emphasize Katerina's powerless position in her husband's home. When Boris is depicted as an aggressor, Katerina gains sympathy in Act I as well as vindication when she kills Boris. Shostakovich then heightens this new dimension of the relationship between Katerina and Boris by adding a scene that shows Boris as a tyrannical father-in-law. When

[7] Dmitry Shostakovich, *Katerina Ismailova*, trans. Edward Downes (London: Friends of Covent Garden, 1963), 7.
[8] Shostakovich, *Katerina Ismailova*, 7.
[9] Shostakovich, *Katerina Ismailova*, 7. Emerson also makes this observation in "Shostakovich and the Literary Tradition," 204 and in "Back to the Future," 62.

Zinovy departs to deal with problems at the mill, his father insists on a humiliating vow of fidelity from Katerina. Caryl Emerson notes that this scene alludes to a character type popularized in Ostrovsky's *The Storm*: "the strong-willed, sexually possessive parental tyrant who is a voyeur in the married life of a passive son."[10] This scene occurs before the relationship with Sergei has begun, and therefore serves not only to foreshadow future infidelity, but also to heighten the audience's distaste for Boris and sympathy for Katerina. It "whitens Katerina by darkening the background."[11]

This iconic scene prepares the audience for another scene that depicts Boris's oppressive role in family life. The scene in which he voyeuristically complains that his son is not hot-blooded as Boris himself was as a young man is in keeping with the behavior the audience expects from such an overbearing authority figure in this context, and Boris's resolution to become Katerina's sexual partner when his son is absent underscores her victimization in the family power structure. Whereas Leskov presents Boris as a meddling old man who criticizes Katerina for remaining childless, Shostakovich depicts him as an emotionally manipulative predator who drives his daughter-in-law to lash out in self-defense and vengeance, not simply to prevent her extramarital relationship with Sergei from becoming public.

Through these alterations to Leskov's characters, Zinovy and Boris are depicted as oppressive and unsympathetic, whereas Katerina is seen as a victim. The libretto clearly initiates the process of reinterpreting her character by showing her to be lonely, unloved, and mistreated. When opportunities arise later in the plot for Katerina to receive the love she desires and take revenge on her husband and father-in-law, the audience hardly condemns her for seeking to break free from her unhappy life. According to MacDonald, she has become

> the victim of vicious circumstances: a woman trapped into marrying the foolish son of a brute and condemned to drag out her days in tedious rural isolation among mindless bumpkins. Longing for life-validating love, in which subject Shostakovich rates her 'a genius,' she can realize this dream only by slaughtering her male chauvinist oppressors.[12]

This certainly would not describe the Katerina of Leskov's story, and small changes and omissions of detail in these three characters begin

[10] Emerson, "Back to the Future," 63. Emerson is referencing Taruskin's identification of this parallel, which appears in Taruskin, *Defining Russia Musically*, 498.
[11] Taruskin, *Defining Russia Musically*, 501.
[12] Ian MacDonald, *The New Shostakovich* (Boston: Northeastern University Press, 1990), 87–88.

a transformation that will reach a new dimension in the plot adaptation.

When literary works are adapted for opera, changes in plot and character are inevitable due to the need to suit the conventions of the operatic genre. In the case of *Lady Macbeth*, some plot changes also serve to enhance Katerina's characterization as a victim. One plot element that receives a new focus in order to favor Katerina by demonizing others is the issue of her failure to produce an heir for her husband's family. Shostakovich achieves this new focus by shifting the perspective on this topic from Zinovy's point of view to Katerina's. It is clear in the short story that Zinovy's previous marriage did not result in children, so upon his wife's death, he married a young and healthy woman in the hope that children would be possible. After five years of marriage, it appears likely that Zinovy and Katerina will also be childless. Leskov describes the pain that this causes Zinovy in more detail than the distress Katerina experiences as a result of their failure to conceive. Zinovy's suffering is described at some length, as are the recriminations that the couple suffers at home for their inability to conceive a child. In the opera, this perspective is altered in order to depict Katerina as the primary sufferer and Zinovy as uninterested in pursuing parenthood. Zinovy never mentions children, and therefore appears less interested in children than Katerina and Boris for the simple reason that his few stage appearances focus on other subject matter. Instead of Zinovy, it is Boris whose hopes are disappointed when Katerina does not become pregnant. He accuses Katerina of not trying to attract his son's attention and insinuates that the pair is childless because Katerina is emotionally cold and distant. Both works allude to coldness on Zinovy's part that causes Katerina to feel increasingly isolated, unloved, and undesirable. However, when this is depicted in the opera rather than described in the short story, the audience's sympathy for Katerina is increased because the focus is placed on Katerina's suffering rather than Zinovy's.

The most important plot alteration is the omission of the scene in which Katerina and Sergei murder Zinovy's young nephew. This scene is an essential part of Leskov's depiction of his protagonist.[13] The murder of the nephew is undertaken purely for personal financial gain, rather than committed partly in self-defense. Shostakovich clearly understood the implications of this crime, and remarked that "the murder of a child, no matter how it may be explained, always makes a bad impression."[14] Omitting this scene is particularly important, because this also permits Shostakovich and

[13] Emerson briefly describes this scene in "Back to the Future," 63.
[14] D[mitri] D. Shostakovich, "Moyo ponimaniye 'Ledi Makbet,'" in *Ledi Makbet Mtsenskogo uyezda: Opera D. D. Shostakovich* (Leningrad: Gosudarstvennïy Akademicheskiy Malïy Teatr, 1934), 6, quoted in Taruskin, *Defining Russia Musically,* 501.

Preis to subvert the original tone of the subsequent arrests. In Leskov, it is the murder of young Fedya that leads to exposure for Katerina and Sergei. In particular, the fact that they are discovered and denounced by moral, upright folk leaving a church service creates a sharp contrast with the murder of a saint-like orphan boy.[15] Instead, the libretto allows Katerina to kill her husband and father-in-law without losing the audience's sympathy.

Then, Katerina suffers at the hands of her oppressive society when a drunk wedding guest reveals the crime. In his search for more alcohol, the guest discovers Zinovy's body in the cellar and the wedding is broken up by police officers of dubious moral authority. These adjustments effectively "reserve the moral high ground for the heroine."[16] Both the police and the priest, who do not appear in the book, are portrayed not as positive moral figures of authority, but as drunken, selfish bunglers. These unintelligent, ineffectual representatives of religion and the law replace Leskov's righteous churchgoers who cry for justice. This perfect example of "whiten[ing] Katerina by darkening the background" certainly secures the audience's sympathy when Katerina and Sergei are arrested at their own wedding.

Additional omissions also emphasize Katerina's isolation and heighten audience sympathy for her in her final scenes. Leskov's prison scenes include more details about the social system and economy within the prisoner convoy, and the presence of two contrasting rivals for Katerina are an important part of this social system. The accessible but cold Fiona and the haughty, materialistic Sonyetka help to depict the system of prisoner relationships and prolong the process of Katerina's abandonment. Most importantly, the short story's scenes in which Fiona commiserates (or at least reasons) with Katerina decrease our sense of Katerina's isolation.[17] In the opera, Katerina is left alone with her unfaithful lover, the taunting Sonyetka, and the crowd's derision.[18] This operatic scene prepares the audience for Katerina's final aria, which certainly brings the character much closer to an attack of conscience than Leskov's Katerina ever comes. Finally, the murder-suicide is cast differently in the opera and the story. Leskov foreshadows this ending early in the relationship between Katerina and Sergei when Katerina warns Sergei never to be unfaithful to her:

> Now listen here, Sergei! I don't know anything about those other women of yours, and I don't want to; all I know is that it was you who seduced me into this love affair of ours, and

[15] Leskov, 148–53.
[16] Taruskin, *Defining Russia Musically*, 501.
[17] Leskov, 163 and 169.
[18] Emerson comments on Shostakovich's omission of the character of Fiona in "Back to the Future," 64.

> you yourself know how much I entered it because I wanted to and how much because of your cunning—so, Sergei, if you deceive me, if you throw me over for anyone else, anyone else at all, then bear this in mind, my darling friend: I won't part from you alive.[19]

In the opera, however, the death scene in which Katerina drags Sonyetka with her into the icy river is more unexpected than in the story. This scene follows the aria "In the woods there is a lake," and this contrast suggests "that her subsequent death appears to be more self-punishment than revenge against her lover and rival."[20]

In creating a libretto that significantly rehabilitates the protagonist, Shostakovich also fundamentally changes the story's tone. He replaces Leskov's third-person narrator with musical characterization that influences the audience's emotional response to the characters. Leskov's narrator occasionally passes implied judgment on Katerina through carefully selected adjectives and adverbs or through the townspeople's comments. However, the overall tone is generally unbiased in the manner of journalistic writing. It is clear from his manner of writing that the characters' actions, when presented objectively without lengthy analysis, are so antisocial that the reader's disapprobation is inevitable. Francis Maes describes the effect of Leskov's writing style and its implications for the main character: "Leskov's Katerina is a monster. His tale is a horror story, a painfully detailed analysis of aberrant behavior. The hair-raising effect is magnified by the detached style in which the story is told: Leskov presents it in the form of an official summary of evidence for a court."[21] This Katerina receives no sympathy from the author, and none can be expected from the reader. Shostakovich's change in tone is evident in both the libretto and the musical treatment. Although plot and character changes are the foundation of Katerina's rehabilitation, the opera's musical characterization replaces Leskov's narrator to further encourage the listener to identify with Katerina. This vital change in tone is accomplished through humanizing lyricism in Katerina's music, comic music that undermines Boris's authority, and musical critique of Sergei's love through subversive orchestral accompaniment. These elements combine to create a musical tone that persuades the audience to give Katerina's emotional reactions priority over her deadly actions.

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[19] Leskov, 129.
[20] Emerson, "Back to the Future," 64.
[21] Francis Maes, *A History of Russian Music: From* Kamarinskaya *to* Babi Yar, trans. Arnold J. Pomerans and Erica Pomerans (Berkeley: University of California Press, 1996), 265.

Many critics have noted that the lyrical music Shostakovich composed for Katerina is an important element in this process.[22] Even in an initial listening, it is evident from the first scene that Katerina is a human being who suffers from loneliness and neglect. Her text and the pleading, complaining qualities of her vocal line in Act I Scene 1 establish her as a victim, even if the agents of her isolation are not identified until later in the first act. Rosamund Bartlett credits the lyricism of Katerina's vocal lines with her transformation into a sympathetic, if not likeable, character whose plight as a member of an oppressive society is "genuinely tragic."[23] Ian MacDonald calls Shostakovich's own sympathy for Katerina the "moral cornerstone of the work."[24] Thus, MacDonald shows that musical characterization sets her apart from her surroundings at least as effectively as the text. This enhances the audience's impression of her moral superiority to her husband and father-in-law.[25]

The first music that Katerina sings in the opera initiates her character development, and it is unfailingly lyrical; that is, its sustained, flowing legato lines suggest deep emotion that contrasts with the musical styles of other characters. In Act I Scene 1, the orchestral accompaniment of rhythmical, sustained tones further enhances the characteristic continuity of her vocal line. This music is suddenly contrasted with the bassoon introduction that heralds the arrival of Boris, who sings in short, choppy vocal phrases punctuated with an equally stodgy accompaniment of uneven plodding. His phrases that extend beyond a few syllables are either repetitive or centered around a single pitch. Boris's vocal lines in this scene are speech-like and contrast with the lyrical, sustained notes of Katerina's earlier solo. Katerina's only short, rhythmic lines are angry responses to Boris: "Yes," when asked whether they will be having mushrooms, and "You! You're the rat! This poison should be for you." Shostakovich continues to provide lyrical vocal writing for all of Katerina's solo scenes, such as the beginning of Act I Scene 3 at R133 and her final aria in Act IV.[26] The orchestral accompaniment for these lines also tends to consist of supportive legato lines. In addition, obbligato instrumental parts often accompany her scenes

[22] Along with Emerson, Taruskin and Rosamund Bartlett remark on the humanizing influence of lyricism in Katerina's vocal lines. See Emerson, "Shostakovich and the Russian Literary Tradition," 70 and "Back to the Future," 69-70; Taruskin, *Defining Russia Musically*, 503; and Rosamund Bartlett, "Shostakovich as Opera Composer," in *The Cambridge Companion to Shostakovich,* ed. Pauline Fairclough and David Fanning (Cambridge: Cambridge University Press, 2008), 189.

[23] Bartlett, 189.

[24] MacDonald, 87–88.

[25] MacDonald, 87–88.

[26] Scene and rehearsal numbers refer to the score of *Katerina Izmailova*, trans. E. Downes (Moscow: MOCKBA, 1965). "R" numbers refer to the boxed rehearsal numbers within scenes.

to heighten the audience's awareness of her pitiful loneliness, as in Act I Scene 3 where the solitary sound of a viola moving alone over sustained, low strings enhances the feelings of unbearable solitude expressed in the text: "Time for bed . . . Dark already . . . Not a soul to talk to. Ah, it's deadly, deadly dull!"[27]

Like Boris, Sergei sings in a musical style that contrasts with Katerina's. Although his vocal lines are frequently lyrical, as befits a lover, the orchestral accompaniment tends toward marcato punctuation rather than lyrical support for his lines. This is particularly clear in the seduction scene of Act I Scene 3 at R167, in which the entire orchestral accompaniment is marked staccato. Another example of detached orchestral accompaniment can be found in his scene with Katerina in Act II Scene 2. In this scene, the orchestra belies Sergei's words as he claims that he is not a typical, fickle man, but a sensitive lover. Sergei claims to be "different from the others. There's only one thing they're after—to enjoy a woman's body—that's all they want! But I'm much more sensitive, I understand what love really means." The orchestral accompaniment does not match his semi-lyrical lines and implies the hollowness of his words through fast-moving *staccati,* which suggest lightness and frivolity rather than the weighty sentiment usually matched with lyricism.[28] His vocal lines are sustained lyrically, but are not as well formed and expressive as Katerina's. This contrast between their vocal styles illustrates Sergei's impulsive, superficial nature and Katerina's deeper, more constant passions.

Shostakovich also uses orchestral accompaniment to influence the audience's reactions to events in the opera. It is already clear that the composer uses comical or discordant orchestral accompaniment to undermine Sergei's attempts at lyricism and to make a farcical caricature of Boris. The orchestral accompaniments that underlie important events, such as Boris's poisoning in Act II Scene 4, clearly articulate not only Boris's suffering, but more importantly, Katerina's apprehension and exultation. Momentary sound effects from a bassoon illustrate the discomfort Boris is experiencing through churning thirty-second-note figures.[29] The ensuing orchestral figuration of sprightly staccato arpeggio-based figures clearly relates not to Boris, but to Katerina, and it depicts her joy in finally daring to hope that she has found a way to free herself from her overbearing father-in-law and the hegemonic oppression he represents. The orchestra, and particularly the prominent flute part, matches Katerina's pitches and can hardly be called menacing or evil. This depiction of Katerina is hopeful, fully human and clearly sympathetic, despite the deadly deed it accompanies.[30] This

[27] See Act I Scene 3 at R133.
[28] See, for example, Act II Scene 5 at R291.
[29] See Act II Scene 4, five measures after R247.
[30] See Act II Scene 4 at R250.

orchestral commentary replaces the objective tone of Leskov's narrator with a musical tone that emphasizes Katerina's perspective at key points in her story.

Another dramatic moment that receives an orchestral treatment tinged with Katerina's emotional state is the murder of Zinovy Borisych. Again, a short instrumental effect depicts Zinovy's death (trills and the descending thirty-second note figure in Act II Scene 5 at R332) while the preceding music illustrates Katerina's desperate struggle against her husband's attack and her rush of adrenaline as she and Sergei overpower Zinovy. The music following Zinovy's death also depicts Katerina's state of mind: an unnatural calm. Slow staccato octaves in a very low range provide a foundation for a smooth, legato melody in thirds with sinuous dotted and triplet rhythms. After four measures, this melody is followed by a hopping line of sixteenth-note-eighth-note anacrusic gestures that is, again, anything but menacing.[31]

Musical characterization is also important in Shostakovich's writing for minor characters and the chorus. In particular, the wedding scene and the police scene are examples of musical treatment that undermines the authority figures and societal institutions that preside over this society. In the wedding, the priest is depicted through his text and music as a carouser who, like the village drunk, might wish that Katerina had chosen him for her husband instead of Sergei. When the priest carouses and the drunk discovers Zinovy's body during his search for more vodka, these characters begin to depict religion and justice as self-serving, corrupt and untrustworthy. It is the characterization of the police officers, however, that most clearly exposes the dysfunction of these social institutions. Their choral scene in Act III depicts their concerns as selfish and absurd; they chafe at being excluded from the wedding festivities and vent their anger by persecuting a socially marginalized character, the local nihilist. This scene uses comic music that contrasts with Katerina's lyrical lines. While Taruskin considers this music "dehumanizing," it can also be viewed as an expression of corruption or an entirely human obsession with the trivial.[32] Bartlett describes the musical treatment of secondary characters as "satirical," which may more accurately encapsulate the implied criticism of the social institutions that these characters represent.[33] The village drunk's hiccup solo in Act III Scene 6 and its staccato orchestral accompaniment provide an example of circus-like, satirical music that caricatures a secondary character—in this case, that of the hapless fool who will inevitably expose the truth. The drunkard's music just before R348 is punctuated with isolated

[31] See Act II Scene 5 at R334.
[32] Richard Taruskin, "When Serious Music Mattered," in *On Russian Music* (Berkeley: University of California Press, 2009), 304.
[33] Bartlett, 189.

notes in irregular rhythms on which he sings "Yx!" to simulate the hiccups of inebriation.

Whether this music is perceived as "dehumanizing" or "satirical," the important point is that it contrasts starkly with Katrina's musical style. In placing the music of the wedding scene and the police scene in opposition to music that depicts Katrina as a lyrical lover, Shostakovich ridicules the institutions that victimize the opera's protagonist and instead exalts her suffering. Emerson names this technique as one of Shostakovich's strengths and praises the composer's "marvelous talent for toy-box effects and the quirky Chaplinesque quality that can turn human images instantly into caricatures." She then describes this "juxtaposition of musical styles" that heightens contrast between operatic elements as a Shostakovich "trademark."[34] In making use of popular musical styles such as vaudeville song and operetta, the composer highlights the contrast between Katerina's emotional sensitivity, which is depicted in her arias, and the other characters' lack of sophistication, depicted in the music of Zinovy's death scene, the village drunk's solo lines, and the police scene.[35] By exalting Katerina's feelings and satirizing or degrading the authority figures and social institutions that surround her, Shostakovich places the focus of the story on her feelings, rather than on her unlawful actions.

The final result of Shostakovich's reworking is a complete reversal of the short story's characterization. Instead of demonizing Katerina, Shostakovich uplifts her as a young woman who chooses love and freedom as a means of escape from her repressive, dysfunctional society. Several scholars, Rosamund Bartlett and Richard Taruskin amongst them, have commented on the way that Shostakovich reinterpreted Leskov's characters and plot events in order to transform a cold-blooded murderess into a victim of the flawed social structures of the past. There can be no question that Shostakovich began the *Lady Macbeth* project with the intention of rehabilitating Katerina. Bartlett claims that Shostakovich found Leskov's interpretation of the story invalid in the new, post-revolution society and believed that the events and characters could be recast as a critique of the society Leskov describes: "'It would be fairest of all,' the composer wrote of his heroine, 'to say that her crimes are a protest against the tenor of the life she is forced to live, against the dark and suffocating atmosphere of the merchant class in the last century.'"[36] Thus, Shostakovich undertook the task of transforming an infamous character, whom Richard Taruskin calls "a

[34] Caryl Emerson, "Shostakovich, Tsvetaeva, Pushkin, Musorgsky: Songs and Dances of Death and Survival," in *Shostakovich in Context*, ed. Rosamund Bartlett (Oxford: Oxford University Press, 2000), 197.
[35] Maes, 268.
[36] Shostakovich, "Moyo ponimaniye 'Ledi Makbet,' 6, quoted in Taruskin, *Defining Russia Musically*, 501.

she-devil pure and simple," into a "class heroine by dehumanizing all her victims and potential judges through admixtures of low genre."[37] In these analyses, both Taruskin and Bartlett describe this new perspective on Katerina as pro-Soviet, which increases the irony of Stalin's disapproval of the work. It is not difficult to find a Marxist approach in this new perspective, which explains abnormal psychology as the result of a dysfunctional class system.[38] In fact, Taruskin calls the work "alarmingly consistent with Stalinist ethics: the one character in the opera presented as positive or even human—that is, the title character—is the one that brutally murders all the others."[39]

Much of the negative critical reaction, which can almost certainly be linked to Stalin's own negative opinion, was directed at the work's sexual frankness and musical style. Western critics condemned it as "communistic" and Stalinist critics called it "bourgeois."[40] If this account of the opera's reception is to be believed, it serves as evidence that Shostakovich succeeded in creating a skillfully subverted version of Leskov's tale. In fact, the story is so subtly reworked as to completely reverse the characterization of the protagonist without drawing any criticism for the opera's most subversive element of all: the vindication of a killer.

When creating the story of Katerina Izmailova, Leskov can have had no idea what his anti-heroine would become in the post-Revolutionary culture that experienced her operatic debut. Paradoxically, his vivid depiction of a woman who will stop at nothing to keep the love of a strong young worker provided Shostakovich with a tragic heroine who is in need of vindication. Her vindication is then accomplished through the application of a Marxist filter to her seemingly inhuman motivations. The transition from an objective narrator to a musical undercurrent in which Katerina's viewpoint predominates initiates the opera's shift away from the tone of the original story. With this first step accomplished, it is through careful manipulation of character details, plot alterations, and musical characterization that Shostakovich transforms a monstrous killer into "a fascinating woman whose life is destroyed by the nightmare of the cruel, heartless environment of the merchant estate in which she lives."[41] By placing the blame for Katerina's unhappiness on her husband, father-in-law, and oppressive society, Shostakovich earns the audience's sympathy for one of the least sympathetic heroines ever created.

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[37] Taruskin, *On Russian Music*, 304.
[38] Maes, 266.
[39] Richard Taruskin, "Shostakovich and Us," in *Shostakovich in Context*, ed. Rosamund Bartlett (Oxford: Oxford University Press, 2000), 16.
[40] Boris Schwarz, *Music and Musical Life in Soviet Russia* (Bloomington: Indiana University Press, 1983), 141.
[41] Maes, 265.

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