

## OPERAcraft: Opera Outreach for the 21st Century

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**Figure 1.** Dress Rehearsal for *The Surface: A World Above* (2013), Virginia Tech (photo credit: Moss Arts Center).

## **Introduction**

Arts outreach has the power to change lives. Art can provide a young person with a positive way of processing life's challenges and also can enable self-expression. Further, it is a medium for interpersonal connection and building community. How do we engage youth in opera? How can we ignite a passion for storytelling? In a 21st-century environment, we have more resources at our disposal than ever before. At a time when artists need to continually justify our professions, it is critical to expand our methods.

Far beyond traveling to schools or church basements, OPERAcraft was created with the intent of blurring the lines of traditional opera outreach. Initiated to provide K-12 students with in-depth arts exposure, the innovative outreach program tasked high school participants with creating an original opera. Funded by grants from the Institute of Creativity, Arts and Technology at Virginia Tech and the National Endowment for the Arts, the program took place in 2013 and 2015 in Blacksburg, Virginia. In each instance, the students developed a story, set a libretto to music of Mozart, as well as created a virtual set of character avatars using a custom modification of the video game Minecraft. The interactive set was projected on a scrim in the Cube (a large black box) at the Moss Arts Center at Virginia Tech while collegiate Opera Workshop students sang the score and high school students controlled their character avatars. The performances, therefore, blended live singing with virtual reality. This project created an example of the type of successful, in-depth outreach that is possible in the 21st century.

OPERAcraft engaged participants in learning about literature, storytelling, scenography, cinematography, costume design, acting, and role-playing. High school participants worked with Virginia Tech faculty in these areas once or twice each week over three to six months during each stage of the outreach program. Moreover, the use of Minecraft to build a virtual set enabled creative self-expression without the financial cost associated with a standard physical set. In fact, the popular video game appealed to a large audience, attracting people that would otherwise not attend opera.

The custom modification (mod) of Minecraft (named OPERAcraft after the program) enhanced the virtual world by adding additional character arm movement and voice activated mouth movement. The virtual characters' mouths opened and closed when the vocalists sang, creating greater realism in a virtual reality platform.

OPERAcraft is an exciting example of what is possible with 21st-century technology and resources. The genre of opera should continue to grow and push boundaries, exploring alternative methods of outreach and attracting new and varied audiences. Beyond being a valuable experience for the participants, OPERAcraft introduced opera to non-traditional audiences, garnering press and attention in the online gaming world. The developers of OPERAcraft are not arguing for the abandonment of traditionally staged opera, but rather an expansion of the concept of what is possible with 21st-century technology.

### **Why is storytelling important?**

Storytelling conveys ideas, impressions, and representations about one's values, culture, heritage, and sense of self, as well as how the self relates to others. Telling a story, especially one that is memorable and worth hearing, might also require an understanding of history, psychology, science, mythology, religion, and/or popular culture. It would certainly require the storyteller to examine what it means to be human. In fact, the world's best literature highlights the ambition, imagination, and complications of what it means to be human—or, as William Faulkner said, “the human heart in conflict with itself.”<sup>1</sup> Students, immersed wholeheartedly in the making of stories, will gain appreciation for the elements that writers use to construct characters, depict setting, shape narrative, and convey ideas in a way that compels others to engage in rigorous thought and/or take action. In the process, students learn to recognize that narratives help to structure and inform nearly every aspect of their lives. Acknowledging the existence of these narratives, and in turn, challenging them with counter-narratives—or dismantling them or adding to them—can give rise to a moment of true

empowerment: when people learn they are key players in the construction of their own stories.



**Figure 2.** Student participants (2013): Isaiah Battaglia, Adam Chittenden, Carter Croy. Virginia Tech (photo credit: Moss Arts Center).

### **Why use a digital format?**

The nature of literacy today is complex and multimodal; for, literacy is no longer found solely in traditional printed text, but rather continues to expand into other modes and media. In February 2014, the original PC version of Minecraft surpassed 100 million users, along with many millions for other versions of the game. Whether they acknowledge it or not, players of Minecraft, like other video gamers, engage in a type of narrative building every time that they play. OPERAcraft foregrounds this process by providing its users with the necessary tools to think about and participate directly in story-making, thus raising awareness of narrative as a construct. When users 1) create characters and devise plot lines; 2) adopt particular settings and points of view; and 3) decide how and in what ways their avatars will perform, move and sing,

they are confronting the basic problems of how to tell and perform a story. Further, OPERAcraft also creates opportunities for players who might otherwise feel more reserved to gain experience as performers. Although the use of player-controlled avatars allows users to participate in the process of acting without putting their own physical bodies on display, users must still make decisions about how this avatar performs.

By capitalizing on the popularity of video games among youth, we can create new learning environments that involve them in both the creative composition and interpretation of text. Many educators wish their students were as invested in schoolwork as they are in video games. Indeed, OPERAcraft provided such an opportunity. The high school participants in the pilot program were completely invested in the program. They were committed to coming each week for six months and were active and present in every part of the process. In fact, all participants wanted to create a sequel and continue to develop their story.

Presenting literacy in a multimodal environment also has the power to reach students who are unsuccessful in a traditional academic setting. By providing the opportunity to *play*, these marginalized students may find a vehicle through which they can re-engage with learning. When asked, “Why bother?” Jennifer Sanders concluded in her study on composing experiences of fourth-grade students that “Multimodal literacies instruction enables children to have creative autonomy, to think and act in unique ways, and allows *all* children to have academic access through dynamic paths: this is why we bother.”<sup>2</sup>

### **Why opera?**

“Opera performed live is a uniquely thrilling experience – at its best, it is hugely powerful and the most emotionally direct of all art forms. The combination of dramatic narrative, stagecraft and music, and especially the range and vulnerability of the human voice, make opera the art form that comes closest to expressing pure emotion. It is storytelling at its most vivid and manipulative.”<sup>3</sup>

Opera is intrinsically interdisciplinary, integrating music, drama, art, poetry, and dance. This is why it is one of the most expensive art forms in the performing arts to produce. OPERAcraft eliminates the financial and logistical problems of traditional production costs by choosing a digital medium. Moreover, this makes the project accessible to a wide audience. Through the use of Minecraft, anyone has the ability to create both a set and characters. The sandbox is infinite and thus an open slate for creativity, art, and design.

A number of scholars have discussed the positive effects of the arts on literacy.<sup>4</sup> Notably, Olshansky concluded that the integration of art and writing instruction encourages diverse learners and strengthens the process of composition.<sup>5</sup> “Literature and music when combined add a much needed depth to human comprehension. Together they have the intrinsic power to reach beyond the surface of history and individual consciousness into the well-springs of the human mind.”<sup>6</sup> Students retain knowledge more effectively when engaged in more than one manner. The combination of literature and music facilitates learning in all three categories of student engagement: behavioral, emotional, and cognitive.<sup>7</sup>

### **Why put opera in a digital platform?**

Researchers around the country are studying the efficacy of multi-modal education, and primary and secondary school teachers are creating new investigative, transdisciplinary curricula. In Idaho, researchers found that students converting short stories to film were “engaged in deep interpretation and reflection about literary concepts, such as characterization, point of view, tone, mood and conflict.”<sup>8</sup> A first-grade class in Ohio integrated opera into literature study and created an inquiry-based examination of fairy tales and opera, inspiring studies of not only literature, but also music history, the science of sound, and the invention of new instruments.<sup>9</sup> Others have worked with students to compose and perform new opera (Montgomery County Schools, Virginia); experimented with digital storytelling (University at Buffalo, State University of New York); and collaborated with the Boys and Girls Club to de-

sign instruments in a Laptop Orchestra (Virginia Tech). OPERAcraft is unique in its combination of literacy, opera, and video game design. It is this holistic approach to storytelling that has proven to be appealing to children.

### **OPERAcraft: first steps**

To initiate the project, the director put together a team of collaborators—a professor of English education; a professor of music, and a professor of creative technologies in music. In addition, graduate and undergraduate students in all three areas were also selected. Further faculty in stage combat and cinema were brought in for limited sessions later in the project. Once the necessary grant funding was secured, the project could proceed. The director recruited a group of high school students from the surrounding high schools and home school networks. After an initial informative meeting, the participants were given an introduction to opera and storytelling.

### **Creating the story**

As previously mentioned, the OPERAcraft program occurred in 2013 and 2015 with different sets of students creating two different stories set to the music of Mozart. The process for creating both the story and the libretto was guided by professors and graduate students. Initially they were directed through the use of “mentor texts.” Mentor texts are:

“pieces of literature that you—both teacher and student—can return to and reread for many different purposes. They are texts to be studied and imitated...Mentor texts help students to take risks and be different writers tomorrow than they are today. It helps them to try out new strategies and formats. They should be basically books that students can relate to and can even read independently or with some support. And of course, a mentor text doesn't have to be in the form of a book...[it] might be a poem, a newspaper article, song lyrics, comic strips, manual, essays, almost anything.”<sup>10</sup>

The first examples of mentor material given to the students was opera itself. After viewing videos of opera excerpts (Mozart, Puccini, and Menotti), the faculty highlighted the concepts of opera and how they differ from musical theatre. They also explored how the music heightens the emotions of the characters and drives the plot with the libretto. Other presented mentor material was musical theatre and young adult literature. By using a multimodal approach (words, pictures, movement, and/or sound for composition), the faculty helped the students to feel comfortable in a space in which they could experiment and innovate.

In the composition process, the faculty began with concept of theme. The students discussed universal themes, citing contemporary literature and film. In moving toward selecting a theme, they were asked to challenge platitudes—e.g., “People are inherently good” and “Only the good die young”—and to discuss conflicts found in various narratives. Eventually, the 2013 group identified interest in the theme “Good Triumphs.” Subsequently, they explored three additional themes: Person vs. Society; Person vs. Person; and Person vs. Supernatural. Although a healthy debate ensued, it was held with respect for each participant and idea. In the end, the students settled on the idea of a main character fighting against an autocratic ruler while attempting to reach a better world.

Once the writing process commenced, each student was challenged to devise a plot. In providing plot structure, the professors introduced the students to the plot strategy “Somebody Wanted... But...So...”<sup>11</sup> instructing the students to create a narrative using this template. With all ideas catalogued, each student brainstormed a proposed plot, giving each participant a chance to explore his/her own ideas on paper. One week later, the students presented their respective plots to the group. Reaching a consensus, one student’s plot was chosen: a female protagonist and her brother trapped in a post-apocalyptic world without their parents and their struggle to find them. Developed from the previous plot discussion, this setting took place in the underworld (a dark, futuristic, dismal place that necessitated escape).

Prior to the actual writing of the libretto, the students were first tasked with identifying character names and their corresponding

ages and voice types. They agreed on five characters: the protagonist (adolescent female, soprano); her brother (early adolescent, tenor); the antagonist (Evil Emperor, tenor); and his two evil cronies (male, baritone and female – mezzo soprano). This enabled the faculty to select specific music that would serve the purpose of each scene.

In order to write the dialogue, the students broke into pairs to develop eight distinctive scenes. They agreed that one scene would be an aria for the protagonist, while the others would be ensemble scenes consisting of duets, trios and quartets. Given the fact that the opera would be brief (20 to 30 minutes), the dialogue had to advance the plot quickly. Although writing of the dialogue was not anyone's favorite activity, the students were guided to supply the words that would become the libretto.

The story-creation followed the same process in 2015, though condensed slightly. That story also included a struggle between an adolescent and autocratic ruler, but was set in a magical realm. Again, the story was entirely theirs to tell, and evolved through collaborative dialogue.



**Figure 3.** Character avatars from *The Surface* (2013): Lilith, Mortimer, Emperor Xavier, Regina, and Marcus. Virginia Tech (photo credit: Moss Arts Center).

### Playing to their strengths

Both groups of students were diverse in experience coming from different high schools and home school systems. Each was highly engaged throughout the process and each had strengths and weaknesses. The students to whom the story was of great importance drove the writing. Moreover, they came to sessions with already developed plots and continued to work on ideas outside of the class time. Those with extensive knowledge and experience with Minecraft helped others to understand the game and also fixed technical glitches before faculty could intervene. Leaders emerged, who took turns steering the group with their actions and words.

Through pre- and post-project interviews, the faculty assessed that this group of students had above average scores for self-efficacy, notably both before and after the project. Therefore, it is logical that many were natural leaders and fully committed. There is no question that this dedication facilitated the project's success.



**Figure 4.** Performance of *The Beacon of Mazen Mines* (2015), Virginia Tech (photo credit: Moss Arts Center)

### **Adding music**

Fitting a new libretto to existing music is, of course, contrary to the normal process of vocal composition. Words inspire the composer to write music that expresses the text. In the absence of a composer, the faculty borrowed music by Mozart and altered rhythm, pitch, and voicing as necessary. Mozart's music was chosen for a multitude of reasons; namely, there is a wealth of repertoire from which to pull, including a wide range of expressive content; it is within the technical abilities of an undergraduate singer; and it belongs to the public domain. More than one musical option was presented for each scene, and the students could choose music that they felt best represented the intended emotional mood. The music was selected from *Le Nozze di Figaro*, *Die Entführung aus dem Serail*, *Così fan tutte*, *Die Zauberflöte*, *Don Giovanni*, *Der Schauspieldirektor*, *Idomeneo*, *La Clemenza di Tito*, and the *Requiem*.

The following musical examples are from the 2015 version of OPERAcraft: *The Beacon of Mazen Mines*. Often, the rhythm was minimally adjusted in order to best match the English text and the inflection of the words. Parts were re-written, added, and notes were eliminated to fit the libretto. The priority was to keep the character of the piece.

**Example 1.** Excerpt from OPERAcraft Scene 2b. Music from *Le Nozze di Figaro*, “Crudel! perchè finora” mm. 1–14<sup>12</sup>

Andante

1 Papa:

Oh where could she be? I've been wait - ing all —

6 night! Oh where could she be? I've been wait-ing all night!

At times, the faculty had to alter the vocal parts in order to fit the libretto, including switching vocal parts and therefore changing registers. Sometimes, this was as simple as an octave displacement.

**Example 2.** Excerpt from OPERAcraft Scene 2b. Music from *Le Nozze di Figaro*, “Crudel! perchè finora” mm. 19–21<sup>13</sup>

19 Mia:

Please tell me what has hap-pened! Papa:

I turned a - round and she was gone!

It also proved necessary to alter vocal parts in larger ensembles.

**Example 3.** Excerpt from OPERAcraft Scene 8b. Music from *Die Entführung aus dem Serail*, “Ach! Belmonte” mm. 272–79<sup>14</sup>

The musical score consists of two systems. The first system (measures 272-279) features four vocal parts: Mia (soprano), Rachel (soprano), Papa (bass), and King (bass). The lyrics are: Mia: "Self - - - - ish King! A poor ex -"; Rachel: "turn. We must re - turn! My head -"; Papa: "want to re - turn home. We want none of the"; King: "gold be - longs to me. No - one shall". The piano accompaniment includes a dynamic marking of *f tutti*. The second system (measures 276-279) features four vocal parts: M (soprano), R (soprano), P (bass), and K (bass). The lyrics are: M: "cuse for a ru - ler!"; R: "aches, and my stom - ach churns!"; P: "gold! We just want to re - turn home!"; K: "leave this realm with a - ny of it!". The piano accompaniment continues with a similar texture.

In pairs, the students were guided through this process of altering the vocal parts. A piano professor demonstrated different options

for each phrase, after which the students chose the option that they preferred. Although not a quick process, fitting text to existing music proved less challenging than originally expected.

### **Minecraft**

Minecraft, the video game sandbox (a style of game that allows the gamer to roam and change a virtual world at will), is akin to a virtual LEGO world. Minecraft has unprecedented popularity in the gaming world in part because it is open ended and allows for extended creative exploration. Far more knowledgeable about the game than the faculty, the students were naturally drawn to this project. Minecraft provided an excellent medium for set building; for, the game is limitless, meaning one can build an infinitely large world. It is easy to use and provides numerous choices regarding texture and material. One simply builds one virtual brick at a time, choosing both the material for the brick and the location. Moreover, it is simple to tear down and rebuild if desired. Further, through an ongoing expansion, the virtual world offers myriad bricks and building blocks with unique features and functionalities, including buttons, doors, and various forms of automation. In addition to set design, students were given an opportunity to shape their own character's appearance and costumes by altering avatar textures.

Although Minecraft was an excellent vessel for an online set, its characters are limited to those considered "stock" and lack emotional range, severely affecting the actors' level of expressivity. As a result, the research team opted to alter Minecraft to better fulfill the needs of OPERAcraft. The ensuing reverse-engineered OPERAcraft mod<sup>15</sup> allows for arm movements and, most significantly, mouth movements guided by the signal capture from each individual singer. It uses a microphone input and separate Pd-L2Ork free open source software<sup>16</sup> (designed to facilitate the building of virtual computer-based instruments) to do the signal processing and broadcasting of the resulting parameters to the Minecraft mod over the network. This mod created voice-activated mouth movement so that when the singers sang, the corresponding

character's mouth moved appropriately. These modifications facilitated significant improvements in the avatar's expression.

In addition to broadening the expressive ability of the characters, the mod also offered an array of features designed to enhance real-time opera production and performance, both locally and over the network. For instance, multiple camera views were added to allow for real-time switching between different views. Such cameras were visible only to the actors and performers while completely invisible to the audience, as they had a "projector" view (one that mimicked the current active camera's position). The multiple cameras allowed for complex camera movement including vantage points whereby one camera was blocking another without any adverse artifacts (e.g., occlusion) to the action, as observed through the "projector" view. The cameras, visible to the performers (actors controlling their avatars), changed color depending on whether they were currently active or tracked by the "projector" view. Active cameras were colored red, whereas inactive were grey.

The system was retrofitted to support subtitles and actor cues administered over the network using the Pd-L2Ork. In addition, the Pd-L2Ork was used to change weather, time of day, invoke fade-outs and fade-ins for scene transitions, and teleport players between previously stored locations in order to facilitate seamless scene transitions. Lastly, the mod was complemented by an experimental addition of virtual audience members who were invisible avatars unable to interact with the world and who could observe the entire action by either automatically linking onto the active camera or by picking their own vantage point. The ensuing system offered significantly greater expressive and production potential, while providing different engagement opportunities for the participating students and faculty.

Since its introduction, the OPERAcraft mod has transitioned onto the free and open source Minetest platform, where it has also integrated full body motion and facial expressions using a Microsoft Kinect HD camera. The new platform dubbed "Cinematicraft"<sup>17</sup> continues to be developed with an anticipated public release scheduled for the end of 2018.

## Rehearsal process

The operas (*The Surface: A World Above* and *The Beacon of Ma-zen Mines*) were rehearsed as any other opera would have been, with the exception that the set and characters lived in a virtual space. The director staged the show, rehearsing the characters' movements and gestures until both memory and flow were achieved. Special attention was given to the use of gestures and head movements. As previously discussed, the Minecraft avatars are not particularly expressive. They have no facial movements and a limited range of movement—they can raise an arm, bend knees, and move the head up and down or side-to-side. Facial expressions are integral to communication and these “actors” are devoid of this ability. Therefore, planned and carefully selected head and arm movements were quite important.

As the set was virtual, there were advantages available in that reality that were not possible on the physical stage. Primarily, a set shift was immediate; specifically, the stage manager could transport characters instantly from one part of the world to another. This proved most useful in transitions and allowed the director to shift the action quickly from one space to another. Additionally, because the actors controlled their avatars from a laptop, the stage manager was able to send staging reminders to the actors during the production, guaranteeing that the avatars would move and react as rehearsed.

The show incorporated a fight into the climax and a stage combat professor was brought in for that work. In helping the participants design an effective fight, she first had the students learn basic stage combat rules. Although there is no need to be concerned for an actor's safety in a virtual reality, it was just as important to having a well-executed and precise combat scene. With rudimentary knowledge of stage combat, the actors were better able to work together to design and execute the fight scene. Just as one would in a traditionally staged opera, the actors had an extra fight call before each rehearsal and performance to make sure that the fight could be executed accurately.



**Figure 5.** Collegiate singers (top left to right; bottom left to right) in 2015: Jack Chandler, Hayden Keefer, Kenzy Forman, Danny Fritsch, Lauren Farrar, and Allison Harris. Virginia Tech (photo credit: Moss Arts Center).

### **Opera workshop**

College students taking an Opera Workshop course were crucial to the project; for, they sang the show. In addition to being an “out of the box” performance opportunity, it was a valuable learning experience. Most of the cast had performed opera scenes in a traditional setting and were comfortable using their bodies for expression. In this production, they were required to act with only their voice. None of these singers had done this before and they had to discover new ways of expression. In reality, all students should be tasked with this challenge, as through this, they learn to incorporate more inflection, more color, and greater expressivity in their voices. When they combine this new understanding of how to use their voice with the renewed use of their bodies, they can be more effective performers. The singers’ contribution to the project cannot be overlooked; they gave the characters their unique voices.

### **Lessons learned**

While Minecraft provided an excellent medium for the virtual set, it did have limitations. As previously mentioned, the reliance on stock characters meant that expressivity is quite limited. Moreover, technical problems can arise at any point—for example, the program can freeze, crash, or need to be rebooted. During one performance, the program froze at the end of the fight scene in a rather climatic moment, significantly reducing its efficacy. Crowd scenes are also practically impossible in Minecraft, as each character present in the world must have an operator. One is therefore limited to as many characters as there are both actors and computers. That said, there is a crowd option in Minecraft, but it produces a group of mindless zombie-like characters who walk forward until they are forced to turn by hitting an object. That option proved to be quite visually distracting and completely non-viable. Despite much investigation, the faculty and participants were unable to find a solution for adding a chorus to the show.

Death is also tricky to work around in Minecraft. If a character actually dies in the game, a notice is flashed on the screen stating that fact. Understandably, this is not something one wants projected on the stage during the performance. However, in order to solve this problem, the students carefully built illusions in the set so that if a character appeared to have died by being pushed over a wall, they in fact fell onto something soft out of sight. The audience, therefore, had the illusion of death, much like they would experience on a physical stage.

### **Successes**

OPERAcraft was very successful, both as a show and as a groundbreaking project. The performances were sold out, the performers were proud of their accomplishment, and the audience of mostly children was engaged from beginning to end. Beyond that, the project garnered attention from the national media—both in print and online. Notice of the performance was posted on gaming websites, leading to over 30,000 online views of the livestream performance.

Viewers came from all over the world, with large percentages from Germany and Russia. Greg Toppo of *USA Today* wrote about OPERAcraft in the epilogue of his book *The Game Believes in You*, citing it as an example of what is possible in the 21st century.<sup>18</sup>

### **Thoughts for the future**

OPERAcraft is an example of what is possible in outreach today, but it is but one. The project, although successful, was challenging in scope. It required significant faculty hours, as well as financial support. A university setting is the perfect place for a project of this type, as a research institution is able to provide a collaborative faculty and the necessary financial resources. Outside of an academic environment, a project of this scope would likely be difficult to manage. The faculty believes that the next step is to devise a streamlined version compatible with a primary school environment. It might present as an online module or a supplemental in-class project. One thing is certain: it would need to allow the students to work in a self-sufficient manner.

Although the project did not engage a large number of students in the creative process (only eight), it did reach an audience of tens of thousands. Many of these viewers had never seen an opera before and a significant number were children. All of these viewers may become future audience members, writers, singers, or composers. It is invaluable to demonstrate that opera is a living, growing genre in the 21st century.

There are many things that the faculty would like to try in a future rendition of OPERAcraft: virtual bodies with complete expression; a composer working with students to create a unique score; more students involved in the creative process. That said, it is most important to try something new and to get out of our box. We should all feel challenged to stretch our boundaries on a daily basis and push them aside when possible.

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Ariana Wyatt's recent opera engagements include appearances with Gotham Chamber Opera, Opera on the James, Opera Omaha, Opera Roanoke, Glimmerglass Opera, Florida Grand Opera, Santa

Fe Opera, the Juilliard Opera Center, and the Aspen Opera Theater. Symphonic highlights include appearances with the Roanoke and Charleston Symphonies and performances of James Whitbourn's *Annelies* in Israel, Prague, and the Kennedy Center. An avid concert artist, recent appearances include those with the Ameropa Festival in Prague, the Parma Festival, the Red Rocks Music Festival, the Commixtus Chamber Music Festival in France, the Aspen Music Festival and School, and the New York Festival of Song. An enthusiastic advocate for contemporary art song and opera, she has premiered and championed chamber works by Alan Louis Smith, Daron Hagen, Gregory Hutter, and Lori Laitman. Ms. Wyatt is a graduate of the Juilliard Opera Center and the University of Southern California. She is assistant professor of voice at Virginia Tech.

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## Notes

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<sup>2</sup> Peggy Albers and Jennifer Sanders, *Literacies, the Arts & Multimodality* (Urbana: National Council of Teachers of English, 2010), 131.

<sup>3</sup> Richard Mantle, "'Opera can make us see, feel and hear the world differently': the UK's opera chiefs tell us why their art form matters," *The Guardian*, May 9, 2014, <https://www.theguardian.com/music/2014/may/09/inside-opera-live-why-opera-matters-uk-opera-chiefs>

<sup>4</sup> Albers and Sanders, *Literacies, the Arts & Multimodality*, 6.

<sup>5</sup> Beth Olshansky, "Making writing a work of art: Image-making within the writing process." *Language Arts* vol. 71, no. 5 (1994): 355–56.

<sup>6</sup> Jean-Pierre Barricelli, Joseph Gibaldi, and Estella Lauter, *Teaching Literature and Other Arts* (New York: The Modern Language Association of America, 1990), 54–55.

<sup>7</sup> Rick VanDeWeghe, "Research matters: What is engaged learning?," *English Journal*, vol. 93, no. 3 (2004): 75–79.

<sup>8</sup> Albers and Sanders, 298.

<sup>9</sup> Ibid., 44–66.

<sup>10</sup> Lynne Dorfman, “Reading, writing, and mentor texts: imagining possibilities,” *National Writing Project*, NWP radio, March 28, 2013, <https://lead.nwp.org/knowledgebase/reading-writing-and-mentor-texts-imagining-possibilities-nwp-radio/>.

<sup>11</sup> Kylee Beers. *When Kids Can't Read, What Teachers Can Do : A Guide for Teachers, 6–12* (Portsmouth: Heinemann, 2003), 147.

<sup>12</sup> W. A. Mozart, *Le Nozze di Figaro* (Milwaukee: G. Schirmer, Inc., 1951), 283.

<sup>13</sup> Ibid., 284.

<sup>14</sup> W. A. Mozart, *Die Entführung aus dem Serail*, (Kassel: Bärenreiter, 1982), 218.

<sup>15</sup> Ico Bukvic et al, “OPERAcraft: Blurring the Lines between Real and Virtual,” *ICMC/CMC/2014 Proceedings* (2014): 228–35.

<sup>16</sup> Ico Bukvic, Albert Gräf, and Jonathan Wilkes, “Meet the Cat: Pd-L2Ork and its New Cross-Platform Version ‘Purr Data,’” *Linux Audio Conference Proceedings* (2017): 7.

<sup>17</sup> Siddharth Narayanan and Ico Bukvic, “Cinematicraft: Immersive Live Machinima as an Empathetic Musical Storytelling Platform,” *International Computer Music Conference Proceedings* (2017): 384–86.

<sup>18</sup> Greg Toppo, *The Game Believes in You: How Digital Play Can Make Our Kids Smarter* (New York: St. Martin’s Press: 2015), 215–21.

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