

Remix: The Art and Craft of Endless Hybridization

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Remix: The Art and Craft of Endless Hybridization

Digital remix provides an educationally useful lens on culture and cultural production as well as on literacy and literacy education.

Michele Knobel | Colin Lankshear

*R*emix means to take cultural artifacts and combine and manipulate them into new kinds of creative blends. Until recently, it mainly referred to using audio-editing techniques to produce “an alternative mix of a recorded song that differed from the original...taking apart the various instruments and components that make up a recording and remixing them into something that sounds completely different” (Seggern, n.d., p. 1). Once digital sound became the norm, all manner of music mixing and sampling techniques were applied using different kinds of hardware devices or software on a computer (Hawkins, 2004). Recently, however, *remix* has been expanded to include music and sound as well as moving and static images taken from films, television, the Internet, personal archives, and elsewhere.

Lessig (2005) argues that digital remix constitutes a contemporary form of writing on the scale of a mass cultural practice and raises issues demanding serious reform of current copyright law. Here we examine remix as a significant literacy practice. We explore shifts in everyday writing practices using examples of remix and analyze the art and craft of creating remixes to better understand these practices from insider (and outsider) perspectives. We consider some conceptual and theoretical relationships between remix, literacy, and literacy education and conclude with a brief discussion of remix within the context of classroom teaching and learning.

Lawrence Lessig on Digital Remix as Writing

Lessig (2005) argues that culture as a whole can be construed as remix. Whenever we comment on, say, a film or a book and discuss it with others, we take the original author’s creativity and remix it in our own lives, using it to extend our own ideas or to produce an evaluation. Lessig explains that “every single act of reading and choosing and criticizing and praising culture is in this sense remix, and it is through this general practice that cultures get made” (n.p.). Remix has not simply emerged with digitization. It has always been a part of any society’s cultural development (see Pettitt’s analysis of remix in

Shakespeare's work, 2007). School practices of creative writing that have students read texts by multiple authors, take bits from each of them, and put them together in a single text constitute a process of taking and remixing "as a way of creating something new" (Lessig, 2005, n.p.). At the broadest level, then, remix is the general condition of cultures: no remix, no culture. At this general and mundane level, we remix language every time we draw on it and remix meanings whenever we take an idea, artifact, or a particular stretch of language and integrate it into what we are saying and doing at the time.

Our concern here, however, is with a more specific sense of remix, one associated particularly with fan practices and undertaken using the capacities of computers to remix music, digital images, texts, sounds, and animation. Young people are embracing remix en masse, and it is increasingly integral to how they make meaning and express ideas. Lessig identifies these practices as what writing is for legions of digital youth:

For those of us over the age of 40, our conception of writing is writing with text.... But if you think about the ways kids under 15 use digital technology to think about writing, [then] writing with text is just one way to write, and not even the most interesting way to write. The more interesting ways are increasingly to use images and sound and video to express ideas. (cited in Koman, 2005, n.p.)

Lessig (2005) provides examples of these "more interesting ways" to write. They include remixing clips from movies to create faux trailers for hypothetical movies, setting remixed movie clips to remixed music of choice synchronized to the visual action, recording anime cartoons and video editing them in synchrony with a favorite music track, mixing found images with original images to express a theme or idea (with or without text added), and mixing images, animations, and texts to create cartoons or satirical posters (including political cartoons and animations). Besides digital remix, popular contemporary remix practices in the narrower sense under discussion here also include producing paper-based forms of fan fiction writing, paper-based manga art, and other popular forms (e.g., postcard remixes displayed on

postsecret.blogspot.com). These continue alongside their hugely subscribed digital variants.

These broad-ranging literacy practices are beginning to find their way into classrooms (Black, 2007, 2008; Gustavson, 2008; Shamburg, 2008), although many after-school, community-group, and library programs have integrated remix practices into their offerings for some years now (Hull, 2004; Pleasants, 2008). Engaging remix in classrooms is not a straightforward matter, however, which we show after discussing popular remix practices in greater depth.

Typical Examples of Remix Practices

Current popular forms of remix include, among many others,

- "Photoshopping" remixes (e.g., Worth1000.com)
- Music and music video remixes (e.g., ccMixer.org, Splicemusic.com)
- "Machinima" remixes (e.g., Machinima.com, 2006)
- Moving image remixes, such as anime music videos (e.g., Animemusicvideos.org; Newgrounds.com)
- Original manga and anime fan art (e.g., DeviantArt.com)
- Television, movie, and book remixes (e.g., Fanfiction.net)
- Serviceware mashups (Grazr.com, Twitvision.com)

These indicate the range of remix practices possible using digital artifacts, software, and online networks and archives. We will now discuss a selection of these.

"Photoshopping" Remixes

Adobe's famous digital image editing software, Photoshop, has become a verb (i.e., "photoshopping") for describing diverse practices of image editing, including remix practices. With affordable image-editing software (Adobe's Photoshop is just one software option among many), enhanced online storage capacities, and website-hosting services that are image-friendly, photoshopping has quickly become a popular online practice. Image remixing ranges over

adding text to images, creating photo montages that mix elements from two or more images together (including prankster-type remixes like placing the head of a famous person on the body of someone caught in a compromising situation), changing the image content itself in some way (e.g., removing someone's hair or body parts or adding a crocodile tail to a kangaroo), and changing image properties (e.g., changing the colors or image focus or fiddling with brightness levels or shading.). Here are some common image-remixing purposes:

- To have fun, including hoaxes (e.g., Worth1000.com, SomethingAwful.com)
- To express solidarity or affinity (e.g., Lostfrog.org, Icanhascheezburger.com)
- To make political points (e.g., Antiwarposters.com)

Popular resources for photoshopping include images available for public use on spaces like Flickr.com, Photobucket.com, and iStockphoto.com. Splashup (splashup.com) is one example of free online photoshopping software. Image-manipulation software offers tutorials for new users, and YouTube.com features many how-to videos on photoshopping techniques.

Music and Music Video Remixes

One popular kind of music remix involves taking bits and pieces of existing songs and splicing them together or over one another. This originally required two or more vinyl record turntables and a mixer (a machine allowing artists to alter the tempo, dynamics, pitch, and sequence of songs) or access to music studios to physically splice two-track tapes to create a single multitrack recording (Hawkins, 2004). Software like GarageBand and Cakewalk now mean “the tracks from any song, regardless of original tempo, can be digitally altered to work over a wide range of tempos and keys” (Hawkins, 2004, p. viii) and can be mixed and remixed in countless ways. (See Hawkins, 2004, for practical guides.) A now-classic example of music remixing is Danger Mouse's *Grey Album*, released in 2004. Danger Mouse mixed samples of instrumental tracks from the Beatles' *White Album* with rapper Jay-

Z's a-cappella *Black Album* to create 12 distinctively different songs (Ayers, 2006a).

Computer and software developments in the 1990s spawned do-it-yourself underground music remixers who did not have studio-approved access to individual tracks within songs. These amateurs worked instead with entire, intact songs, often splicing together wildly different songs in their work (Ayers, 2006b; Wikipedia, 2007; see whomix.trilete.net for remixes based on the *Doctor Who* theme song). Some singers and bands—like Jay-Z—encourage remixing and make mixable versions of their work available online for downloading and tinkering. ccMixter.org affords users access to Creative Commons–licensed music resources that can be used in remixes, too.

Anime Music Videos

Anime music videos (AMV) form a distinct branch of fan music video clips. Their visual resources are clips of anime—animated Japanese cartoons—taken from anime movies or television series, or they are produced by the AMV creators themselves. AMV are often tribute videos, in which the clips used collectively encapsulate key aspects of a favorite anime series. AMV can also be conceptual and focus on a particular dimension of an anime series, such as the relationship between two different characters; values such as strength, courage, determination, and loyalty; or archetypal themes such as the struggle between good and evil. AMV can also simply be a celebration of anime itself, set to a favorite song. For example, the Newgrounds portal for AMV contains material like Chuck Gaffney's remix of clips from several anime shows like *Inuyasha*, *Dragon Ball-Z*, and *Sailor Moon* set to the chorus of Alphaville's song “Big in Japan” (see newgrounds.com/portal/view/136982).

Animemusicvideos.org is an especially user-friendly site for newcomers. Typical software used to create AMV includes Windows Movie Maker (ships with PC computers) and iMovie (ships with Apple computers). YouTube.com is a wellspring of tutorials in using both applications to create movies. YouTube.com is also a rich resource for anime video clips; although, copyright infringement is often an issue with such clips.

“Machinima” Remixes

The word *machinima* (a combination of *machine* and *cinema*) refers to the process by which fans use video-game animation engines to create movies. A game engine is the core software program that makes a game run. It provides the various functionalities needed in a game, like rendering graphics, scripting, animation, sound, and so on (Kelland, Morris, & Lloyd, 2005). Until recently, this kind of animation work demanded expensive, high-end 3D graphics and animation engines, and it was mostly the preserve of professional animators.

Creating machinima involves telling a story using tools, elements, and resources found within the game engine, (such as camera-angle options, script editors, and level editors), along with resources such as characters and character movement ranges, settings, lighting, and game world physics that are available within the game itself. Creators play out their stories within the game environment and record the action. Movie action is generally captured by software that can record onscreen action (e.g., Fraps, iShowYou), although some games and 3D worlds do have recording functions built into them (e.g., *The Movies*, *Second Life*). Purpose-built machinima software leapfrogs new users directly into animation-making spaces and recording functions (e.g., *Machinimation*, *Movie Storm*). Clips, or takes, are spliced together using movie-editing software (e.g., *iMovie*, *Windows Movie Maker*).

Machinima also describes the genre of animation generated by this process. These animations may be fan fictions and extend a game narrative in some way, or the game may simply provide tools and resources for producing an entirely unrelated text. For example, animations like *Hardly Workin'* and *Red vs. Blue* turn first-person shooter games into soap opera and comedy shows and have won film festival awards around the world (Kelland et al., 2005). Increasingly sophisticated video games and the development of user-friendly, video-editing software have seen machinima move more toward the everyday. Newcomers to machinima can access online tutorials and interviews with leading creators for sourcing insider tips on how to create their own animated movies. The popularity of this kind of animation remixing has seen the

launch of games that openly encourage remixing, games like Lionhead Studios' *The Movies*, Bioware's *Neverwinter Nights*, Epic Games' *Unreal Tournament*, and Microsoft's *Halo 3*. Some game companies run competitions for machinima made using their games. *Machinima for Dummies* (Hancock & Ingram, 2007) comes with software for producing machinima without recourse to a video game and is an excellent resource for beginners.

Remix as Endless Hybridization

Hybridization

Biologists designate two main kinds of hybridization:

1. The result of interbreeding between two animals or plants of different orders—either different species within the same genus (mules, hinnies, ligers, zedonks, in the case of animals) or between different subspecies within a species (Bengal tiger and Siberian tiger)
2. Crosses within a single species (e.g., crossing New Zealand collie sheep dogs to produce strong, short-haired herding dogs, called Huntaways, with a loud bark, and well suited to New Zealand's weather and terrain) to obtain characteristics that are not found at all or are not found consistently in the parent populations—the aim being to arrive at desirable characteristics consistently by deliberate rearrangement of genetic material to create new breeds

Whereas some hybrids are infertile, many are not.

The word *hybridization* captures important dimensions of the relationship between cultural development and remix practices. For example, hybridization occurs in remixing a species of video game with a species of video-editing technique(s) to create narratives via writing with moving images and sound for do-it-yourself entertainment purposes (e.g., the *Red vs. Blue* machinima series). This kind of hybrid remix has in turn influenced commercial media, including television advertising (e.g., Volvo's "Game On" and Coca-Cola's "Coke Side of Life" commercials) and commercial entertainment (e.g., the "Make Love

Not Warcraft” episode of *South Park* and MTV’s machinima music videos).

Endless(ness)

In the sense that each new mix becomes a meaning-making resource for subsequent remixes, there is no end to remixing. Each remix in principle expands the possibilities for future remixes. In reality, however, many remixes prove “infertile.” They are not subsequently remixed by others and may not even be viewed, read, or listened to more than a few times. This may be completely immaterial to the producers, for whom the full significance of the work might consist merely in bringing a creation to fruition as an expression of fan appreciation, as self-expression, or as another self-identity constitutive move.

There are multiple potential indices of “fertility.” The mere total number of views per uploaded video is a measure of fertility—at least in one sense of reproduction—since viewing entails making a copy. Number of views is certainly one measure recognized by practitioners of remix as evidence of attainment. AMV uploaded to YouTube and viewed, say, more than half a million times might reasonably be considered fertile. Longevity is another measure of fertility. Current remixes that reference previous remixes in a layering of significance indicate the fertility of an earlier remix.

The All Your Base set of photoshopped remixes is a good example of a long-lived, fertile remix (see Allyourbase.planettribes.gamespy.com). This particular set of images grew out of a clip from the opening sequence to the Japanese video game *Zero Wing*, which was uploaded to the Internet sometime in 2000 or 2001. The syntactic and semantic hiccups within the English subtitles of this clip tapped deeply into what a *Time* magazine article identified as “geek kitsch” humor (Taylor, 2001). The phrase “All your base are belong to us,” uttered by the leader of the invading force, especially caught on. It generated an hilarious set of photoshopped images that reproduced this phrase within a variety of settings (e.g., in the rewording of the iconic Hollywood sign, on billboards and road signs, on food products, as part of television game shows). Elements of this original photoshopped set have appeared in subsequent remixes by providing

the syntax for actual newspaper headlines (e.g., “All your voters are belong to us”), as images in other remixed photo sets (e.g., the plane pulling a banner in the Lost Frog remix or the phrase and accompanying image appearing in a copyright resistance movement online), and in the form of remixed photo sets located within new settings (e.g., the Danish production “All Your Iraq Are Belong to Us”; see Knobel & Lankshear, 2007).

From an educational perspective, interesting questions might be posed about what gets remixed, how items get remixed, when remix begets innovation, and the directions this takes. Teachers might contemplate how to best recognize and formally value students’ own remixes in their school work (e.g., narratives that are actually clever fan fictions or a complex layering of remix themes). We can begin to tap potential responses to such questions by considering the art and craft of remix practices.

Aspects of the Art of Remix

By the *art* of remix, we mean the aesthetics, appreciation, form, and composition dimensions of remix practices. These are centrally concerned with questions about what makes a remix good or of high quality and about the kinds of elements or components (including their modes) that go into effective and fertile remixes. These dimensions of the art of remix will be familiar to teachers who value similar qualities in students’ work at school. At this level, art ranges over the conceptualization of a production (e.g., where the concept comes from, how it comes together, and what makes it strong), the design for realizing the concept as elegantly and pleasingly as possible, norms and criteria and other aspects of a tradition whose observance is seen as integral to good work, and so on.

Josh (a pseudonym) is a 17-year-old student who devotes much of his spare time to creating AMV. His projects often require months of time and hundreds of anime clips to complete. As of November 2007, his “Konoha Memory Book” had topped 1,640,000 views across its multiple postings by different users on YouTube. It won the popular vote at the 2006 Anime Expo in Los Angeles (topping the list in several judging categories, but competition rules permit only one official award per video). Josh is a fan of the

Naruto anime series and creates predominantly conceptual AMV. Despite his success, Josh is conscious of what expert peers might perceive as limitations in his work:

I use [opening and closing sequences from television anime] a lot since the animation in them is superb and sometimes it's perfect for scenes; but the credits are looked down upon just as badly as being able to see subtitles. Not using [opening and closing sequences and subtitles] would be the only way I could be taken seriously on AMV.org.

One notable guide to AMV production on the premier affinity site Animemusicvideos.org (or, as referred to in anime music video-making circles, "AMV.org") focuses on AMV theory (Kalium, 2006) and discusses key components involved in making good-quality AMV. For example, it addresses three key production components:

1. Synch—or the connection between the music and video clips, without which you have anime and music but no real connection between them—is important in terms of the musical, lyrical, and mood dimensions.
2. Concept—the author's vision for the video, what the author wants viewers to think and understand, or how the author wants them to feel—is explicated by reference to storytelling, exploration of ideas or anime themes, and character examination.
3. Effects—such as transitions between clips and special effects—are addressed with respect to their meaning, composition, and appearance.

The guide provides examples for each component, thus offering explicit suggestions for expert performance that could be built into formal education considerations of aesthetic creativity. (For similar insider guides pertaining to the art of other kinds of remix, see Lankshear & Knobel, 2006.)

The Craft of Remix

The *craft* of remix means knowledge of its technical aspects. Photoshopped remixes, for example, have been greatly facilitated by the development of user-friendly

software but still require a basic set of technical skills that can be honed through trial and practice. These skills include preparation know-how, like being able to scan hardcopy images, being able to transfer images from a digital camera or memory card to a computer, knowing how to download images from the Internet, and knowing how to convert image files into different file formats if necessary (e.g., *.jpg, *.tiff *.gif). Photoshoppers also need to know how to use digital-image editing software (e.g., Adobe Photoshop, Jasc Paint Shop Pro). Within digital-image software environments, photoshopping craft includes knowing how to use marquee tools and crop functions to select specific sections of an image and transfer them to another and knowing how to use a repertoire of image-adjustment tools and functions, like blur, fill, clone stamp, shape selection, and color-matching functions, as well as magic wands, palettes, and so on. Technical know-how can be gained via tutorials built into the software itself, and beginners have access to a range of online and book-based guides to help with mastering a wide range of tools and functions (e.g., Perkins, 2006; Worth1000, 2007).

A range of online and offline resources exists for enhancing the craft of other remix practices. Those resources include the answers to FAQs (frequently asked questions) posted on remix community forums or websites, fan art how-tos (e.g., Howtodrawmanga.com), detailed tutorials for creating machinima movies (e.g., Hancock & Ingram, 2007; Hawkins, 2005; Marino, 2004), guides to music remixing (e.g., Hawkins, 2004; Knobel & Lankshear, 2007) digital video-editing handbooks (e.g., Kenworthy, 2005), and guides to creating AMV (e.g., Animemusicvideos.org, 2007).

The craft of remix entails understanding the risks one may run in using commercial materials in a remix. In addition to being familiar with copyright symbols and the reach of certain licenses, this includes knowing how to read the End User License Agreements included with software and online services and knowing what is "fair use." The Creative Commons website provides an excellent service that searches the Internet for materials that carry public-use copyrights (creativecommons.org) and that circumvent many of the legal issues encountered when using television

and DVD material in remixes. From an educational standpoint, the recent development of the Creative Commons' ccLearn license (learn.creativecommons.org) is groundbreaking. It focuses on addressing legal, technical, and cultural barriers to remixing education materials and contributes directly to opening spaces within classrooms for more sustained attention to, and engagement with, remix practices.

Conceptual and Theoretical Connections

At the outset, we referred to Lessig's (2005) idea of remix as writing. In this section, we try to extend this idea by building some conceptual and theoretical bridges between remix, literacies, and literacy education by drawing on selected ideas spanning sociocultural studies of literacy from 1980 to 2007.

A Conceptual Definition of Literacies

We define *literacies* as "socially recognized ways of generating, communicating and negotiating meaningful content through the medium of encoded texts within contexts of participation in Discourses or as members of Discourses" (Lankshear & Knobel, 2006, p. 64).

By "socially recognized ways," we mean something close to the concept of practice developed by Scribner and Cole (1981) in relation to literacy. They defined *practices* as "socially developed and patterned ways of using technology and knowledge to accomplish tasks" (p. 236). Practices thus comprise technology, knowledge, and skills organized in ways that participants recognize, follow, and modify as changes emerge in tasks and purposes as well as in technology and knowledge.

This accords well with the remix practices of fans. New socially recognized ways of pursuing familiar and novel tasks—like using remixed news footage synched to a love song to convey social commentary, exploring symbolism and emotion through AMV, writing fan fictions collaboratively online via instant-messaged role plays—are emerging and evolving apace and with a good deal of consciousness on the part of people who are building and developing them as this is going on. Much of this conscious building and refining is being done by tech-savvy young

people. Scribner and Cole's (1981) account of literacy as practice is better placed to recognize this than many subsequent accounts of that concept. Scribner and Cole put technology—broadly construed—up front in their account of practice. This visibility often slipped subsequently into the background as conceptions of literacy practices increasingly centered on texts and their linguistic-semiotic dimensions. Yet keeping the technology dimension of practice clearly visible is crucial to understanding many changes currently taking place in literacy.

As we refer to it here, encoding involves much more than "letteracy." *Encoding* means rendering texts in forms that allow them to be retrieved, worked with, and made available independently of the physical presence of an enunciator. The particular kinds of codes employed in literacy practices are varied and contingent. In our view, someone who "freezes" language as a digitally encoded passage of speech and uploads it to the Internet as a podcast is engaging in literacy. So, equally, is someone who photoshops an image—whether or not it includes a written text component.

Social practices of literacy are discursive. Discourse can be seen as the underlying principle of meaning and meaningfulness. We "do life" as individuals and as members of social and cultural groups—always as what Gee (2007) called "situated selves"—in and through "Discourses," which can be understood as meaningful coordinations of human and nonhuman elements. Meaning making draws on knowledge of Discourses—that is, on insider perspectives, which often go beyond the literal and beyond what is literally in the sign. Within remix practices, Discourse knowledge is often key to understanding a remix.

The phenomenon known as "LOLcats" exemplifies this. LOLcat images comprise a photograph of a cat and a caption (see icanhascheezburger.com or www.dropline.net/cats). These images rarely make sense at a literal level, however. They typically show cats in all sorts of weird poses with captions that comprise strange, phonetically spelled, syntactically odd written texts (that nonetheless answer to certain insider conventions of use). Many of these texts appear nonsensical to outsiders.

Participating in the remixed LOLcats meme is deeply identity-oriented and relational. It includes, for

instance, using distinctive language, popular-culture references, and certain motifs (e.g., “i can has X?”; “o hai” for “oh hello,” which invokes pop-culture English translations of Japanese texts; “kthnxby” for “Okay, thanks. Bye”; repeated refrains like “I is in ur X, Ying all ur Zs”; and various uses of game, computer, and movie language like “lasers on,” “morph ball acquired,” and “n00b”). Shared insider jokes about cute kittens having secret lives as avid game players, being computer technicians, having a range of magical powers, being able to muster a range of smart weapons for different purposes, and suchlike, tap into a keen interest in the absurd often found in gaming and computer discussion boards where these kinds of images were first generated. Participation signals solidarity with the spirit of the phenomenon (“I get it; I’m part of this” or “I am like you”) rather than any particular attention to the information value of these images.

Part of the importance of defining the word *literacies* explicitly in relation to *Discourses*, then, is that it speaks to the meanings that insiders and outsiders to particular practices can and cannot make respectively. It reminds us that texts evoke interpretation on all kinds of levels that may be only partially accessible linguistically.

A Technical, Discourse, and Evaluative View of Literacy Education

Advocates of social practice approaches to literacy and literacy education emphasize the multidimensional nature of literacy. We think of literacy as having *technical*, *discourse*, and *evaluative* dimensions. Being literate in ways we think are well exemplified by serious aficionados of popular remix practices entails being proficient in each dimension.

The technical dimension involves knowing one’s way around the processes and tools for encoding meanings one seeks to articulate. In the case of machinima, the technical dimension can be highly complex and demanding, including knowing not only how to play a video game through to high levels to have access to sufficiently developed characters, props, and settings but also how to perform myriad operations to synchronize gestures and speech, edit and splice video clips, and so on.

The *discourse* dimension involves bringing cultural knowledge to bear on the tasks or purposes of the practice in which one is engaged. It is about knowing what kind of situated practice one is in; what the rules, norms, and criteria are that apply to that practice; what kinds of shared meanings circulate among members of the practice and the kinds of signs, symbols, sounds (meaning tokens) that bespeak these; and how different coordinations of these can convey different meanings (e.g., knowing how to conduct oneself as an effective fan fiction reviewer on Fanfiction.net or knowing what’s entailed in terms of image, caption, and joke sharing to photoshop a LOLcat image that garners lots of attention).

The evaluative dimension has to do with knowing how to enhance or improve the practice in order for it to better fulfill the interests of those who engage in and are affected by it. There are internal and external aspects to this evaluative dimension. From an internal standpoint, the purposes of a literacy practice are taken as given and the evaluative dimension is concerned with realizing these purposes more fully, efficiently, or richly. This might involve refining techniques to obtain a better end product, simplifying processes to make the practice more inclusive, developing a software tool or more helpful how-to guides, and so on. From an external standpoint, the evaluative dimension may involve interrogating or revising remix purposes to make them more responsive to people’s needs, more altruistic, more representative, and the like.

In the various examples of remix practices and the remix artifacts we have described, it is easy to see these three dimensions exemplified in what practitioners have done. The examples provide concrete cases of what theoretical concepts and distinctions germane to literacy and literacy education look like within practices that are increasingly familiar to school-age learners. Such cases could be highlighted by teachers in educationally productive ways to help learners relate what they already know and do as remixers to aspects of their classroom learning.

Powerful Tools: Manipulation and Distribution

Gee (2007) observes that humans feel “expanded and empowered when they can manipulate powerful tools

in intricate ways that extend their area of effectiveness” (p. 33). He further notes that many of the tools young people increasingly have access to today are “smart tools” that have knowledge built into them in ways that enable them to “collaborate” with the tool user to do complex things that the user either could not do alone or could not do as effectively. The tool user and the tool “each have knowledge that must be integrated together” if a purpose is to be achieved (p. 34). The smart tool permits users to have experiences of extending themselves into a world and to manipulate aspects of that world in a fine-grained way in pursuing understanding, mastery, or creative production. Gee extends this concept of smart tools beyond material artifacts like smart computer programs to include intellectual tools (he mentions geometry). When we understand things like concepts, theories, distinctions, categories, and the like as tools that we can use, and when we get some dexterity in using them, we likewise feel expanded and empowered when going about our worlds of practice, including our educational worlds of practice.

The AMV theory guide by Kalium (2006) referred to earlier is an example of an abstract smart tool that AMV aficionados can use in conjunction with their computing tools to realize their goals. It tunes in the creator to the need to attend simultaneously to synch, concept, and effects in going about creating an AMV. As one becomes increasingly adept at translating these concepts and norms into concrete moves in the context of whatever genre one is working in—a process aided by receiving feedback from more experienced peers after posting a creation online—one experiences greater power in taking on more complex projects, all the while becoming more knowledgeable about and proficient in the art and craft of remix.

Such smart tools are, however, most readily and effectively acquired and mastered in contexts of situated practices of producing for authentic audiences under conditions where support, expertise, and feedback are available just in time and just in place; where the practice is constructive rather than punitive; and where it is recognized that advancement is by levels, as in a game, and not all or nothing, as in a pass-or-fail test. Classroom pedagogy stands to learn much from

remix practices and smart tools and how they enable learning and achievement.

Remix and Classroom Teaching and Learning

Remix practices are fruitful and rewarding ways of becoming proficient within a range of new literacies. It does not follow, however, that they can be transferred easily or usefully to classroom settings or that we should try to transfer them in any direct or immediate way. Gee (2003, 2007) argues that while video games are easily learned (because they have sound learning principles factored into their design), this does not imply that we should import them holus-bolus into classrooms. Rather, he says, the point is to understand how and why video games constitute social and learning systems that are conducive to learning effectively, and with high levels of personal investment in achieving success, and to then try to apply what we identify as their sound learning principles to educational purposes. This may, and often will, involve some degree of gaming or game-like activities in classrooms not because they are *games* and many kids happen to like games, nor because it is a fun way to get some content across, but, rather, because the *learning principles* that games encapsulate can be leveraged for educational ends (cf. Gee 2007, ch 4).

Consider, for example, introducing well-designed educational simulations, virtual worlds, or games that have similar qualities to games like *SimCity* or *Civilization* into the classroom; simulated worlds where players bring together their way of understanding that world (as presented in the context of the game), the goals and purposes they want to achieve in that world, and the skills and knowledge they have for carrying out their actions. As Gee (2007) notes, when players experience a match between their skills, perspectives, and action goals in commercial games, they feel powerful and satisfied. They learn but want to go on learning further—to move to a new level, to manipulate the game to see what else they can do in that world by applying their perspective and skills to it, and to learn how these perspectives and skills might have to change in order to be successful. Appropriating this quality of games for educational purposes will involve moving from worlds inhabited

by many of the kinds of characters and roles (authentic professionals, as Gee calls them, whether they be soldiers or thieves or tomb raiders) to worlds inhabited by scientists, historians, ecologists, physicists, urban planners, geographers, biologists, and so on. There is no reason, says Gee (2007), why educational games could not let players experience a match between the world and the way “a particular type of scientist, for instance, sees and acts upon the world” (p. 26).

This involves using games and other kinds of simulations to provide contexts and means for learners to take on what Gee calls *projective identities*. These identities approximate to mature versions of various kinds of authentic professionals that education is supposed to promote, and they help develop an active and informed citizenry. This is precisely the kind of education extension of games and other simulations that Beckett and Shaffer (2005) report in their account of developing and researching an “augmented reality learning environment” called *Madison 2200*.

This simulation game used a Geographic Information System (GIS) model, and was based on the principle of aligning “authentic professional practice, technological tool, and domain of knowledge” (Beckett & Shaffer, 2005, p. 36). Its aim was to enable learners to understand how and why decisions about urban environments have interdependent consequences for the ecological systems of cities. *Madison 2200* set learners to solving “an authentic urban planning problem” using a GIS-based planning simulation tool to develop a land use plan for a street in the business district of a city. The learning environment in which the technological simulation was to be used was “orchestrated by authentic urban planning practices” (p. 38), such that the planning tool was situated within a realistic context of urban planning work, and students would construct their solution to the planning problem within a framework of the ways real urban planners go about solving problems.

Engaging in well-designed “games” that provide access to developing perspective, skills, knowledge, and an inside view of the work of authentic professionals may well be exciting and enjoyable to a large extent. As we have noted, however, that is not really our point here, although it is a decided plus for formal learning. We are not emphasizing the point that

students are (more) likely to learn effectively when they are having fun (although this is often true); rather, we want to emphasize the extent to which humans “have fun” when they are learning because we are by nature and necessity learning organisms (Gee, 2007).

Humans are “wired” for learning. The fun associated with successful learning and mastery is simply the feeling of experiencing ourselves actualizing what we are constituted to do and be. The main point here is the primary importance of planning and organizing learning around *sound learning principles* of the kinds Gee (2007), Squire (2006), and Beckett and Shaffer (2005), among many other learning scientists, identify. It just happens that many of these principles are integral to the success of well-designed and well-produced games.

Exactly the same applies, and for the same reasons, to educational appropriations of popular-culture remix practices. The potential for positive interplay between remix practices and conventional literacy attainment in formal settings like classrooms is considerable, although not yet widely realized. Lessig (2004) reported an example from a school in a low-income area of inner-city Los Angeles. In a project that involved mixing images, sound, and text high school students with low school-literacy achievement (and an open resistance to writing at school) expressed their perspectives on gun violence—with which they were very familiar. Inspired by their own video remixes, students “bumped up against the fact [that they had] to explain this...and really [needed] to write something.” Often “they would rewrite a paragraph 5, 6, 7, 8 times, till they got it right. Because they *needed* to” (p. 39, italics added). This need was born of emotional and cognitive investment in an achievement and the will to perfect it as a statement approximating to a mature expression of authentic professional identity (cf. Gee, 2007, ch 6).

Gustavson (2008) outlines ways that music remix practices can be incorporated into classrooms, including focusing on performing oral persuasive texts in front of authentic audiences, analyzing and remixing song lyrics to make strong literary statements about one’s self or world, and so on. Other educators recognize the potential that machinima, fan fiction, digital video editing, and other remix practices have for

providing conduits to enhanced understandings and realizations of literary concepts such as successful narration, plausible character development, convincing performance, and the like, and they are implementing projects designed to foster insider understandings of remix on the part of teachers (Black, 2007, 2008; Herzing, 2005; Jenkins, 2006; State of Queensland, 2007; Shamburg, 2008; Thomas, 2007). These projects provide excellent exemplars of how remix can be incorporated effectively into classrooms without compromising the ethos of remix practices.

Conclusion

Approaching digital remix as the art and craft of endless hybridization provides an educationally useful lens on culture and cultural production generally and on literacy and literacy education more specifically. While educationally satisfying and productive integration of remix theory and practices into classroom learning is no simple matter, we would argue that time and effort expended in pursuing principled appropriations and leverage of the qualities they have that incline young people to invest so much of themselves in creative remix will prove educationally beneficial for learners and teachers alike.

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