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## REMIXABILITY

### Remixing and Remixability

The dramatic increase in quantity of information greatly speeded up by Internet has been accompanied by another fundamental development. Imagine water running down a mountain. If the quantity of water keeps continuously increasing, it will find numerous new paths and these paths will keep getting wider. Something similar is happening as the amount of information keeps growing - except these paths are also all connected to each other and they go in all directions; up, down, sideways. Here are some of these new paths which facilitate movement of information between people, listed in no particular order: SMS, forward and redirect function in email clients, mailing lists, Web links, RSS, blogs, social bookmarking, tagging, publishing (as in publishing one's playlist on a web site), peer-to-peer networks, Web services, Firewire, Bluetooth. These paths stimulate people to draw information from all kinds of sources into their own space, remix and make it available to others, as well as to collaborate or at least play on a common information platform (Wikipedia, Flickr). Barb Dybwad introduces a nice term "collaborative remixability" to talk about this process: "I think the most interesting aspects of Web 2.0 are new tools that explore the continuum between the personal and the social, and tools that are endowed with a certain flexibility and modularity which enables collaborative remixability — a transformative process in which the information and media we've organized and shared can be recombined and built on to create new forms, concepts, ideas, mashups and services." [1]

If a traditional twentieth century model of cultural communication described movement of information in one direction from a source to a receiver, now the reception point is just a temporary station on information's path. If we compare information or media object with a train, then each receiver can be compared to a train station. Information arrives, gets remixed with other information, and then the new package travels to other destination where the process is repeated.

We can find precedents for this "remixability" – for instance in modern electronic music where remix has become the key method since the 1980s. More generally, most human cultures developed by borrowing and reworking forms and styles from other cultures; the resulting "remixes" were to be incorporated into other cultures. Ancient Rome remixed Ancient Greece; Renaissance remixed antiquity; nineteenth century European architecture remixed many historical periods including the Renaissance; and today graphic and fashion designers remix

together numerous historical and local cultural forms, from Japanese Manga to traditional Indian clothing. At first glance it may seem that this traditional cultural remixability is quite different from “vernacular” remixability made possible by the computer-based techniques described above. Clearly, a professional designer working on a poster or a professional musician working on a new mix is different from somebody who is writing a blog entry or publishing her bookmarks.

But this is a wrong view. The two kinds of remixability are part of the same continuum. For the designer and musician (to continue with the sample example) are equally affected by the same computer technologies. Design software and music composition software make the technical operation of remixing very easy; the Internet greatly increases the ease of locating and reusing material from other periods, artists, designers, and so on. Even more importantly, since every company and freelance professionals in all cultural fields, from motion graphics to architecture to fine art, publish documentation of their projects on their Web sites, everybody can keep up with what everybody else is doing. Therefore, although the speed with which a new original architectural solution starts showing up in projects of other architects and architectural students is much slower than the speed with which an interesting blog entry gets referenced in other blogs, the difference is quantitative than qualitative. Similarly, when H&M or Gap can “reverse engineer” the latest fashion collection by a high-end design label in only a few weeks, this is part of the same new logic of speeded up cultural remixability enabled by computers. In short, a person simply copying parts of a message into the new email she is writing, and the largest media and consumer company recycling designs of other companies are doing the same thing – they practice remixability.

The remixability does not require modularity - but it greatly benefits from it. Although precedents of remixing in music can be found earlier, it was the introduction of multi-track mixers that made remixing a standard practice. With each element of a song – vocals, drums, etc. – available for separate manipulation, it became possible to ‘re-mix’ the song: change the volume of some tracks or substitute new tracks for the old ones. According to the book *DJ Culture* by Ulf Poscardt, first disco remixes were made in 1972 by DJ Tom Moulton. As Poscardt points out, they “Moulton sought above all a different weighting of the various soundtracks, and worked the rhythmic elements of the disco songs even more clearly and powerfully...Moulton used the various elements of the sixteen or twenty-four track master tapes and remixed them.”[2]

In most cultural fields today we have a clear-cut separation between libraries of elements designed to be sampled – stock photos, graphic backgrounds, music, software libraries – and the cultural objects that incorporate these elements. For instance, a graphic design may use photographs that the designer bought from a photo stock house. But this fact is not advertised; similarly, the fact that this design (if it is successful) will be inevitably copied and sampled by other designers is not openly acknowledged by the design field. The only fields where

sampling and remixing are done openly are music and computer programming, where developers rely on software libraries in writing new software.

Will the separation between libraries of samples and “authentic” cultural works blur in the future? Will the future cultural forms be deliberately made from discrete samples designed to be copied and incorporated into other projects? It is interesting to imagine a cultural ecology where all kinds of cultural objects regardless of the medium or material are made from Lego-like building blocks. The blocks come with complete information necessary to easily copy and paste them in a new object – either by a human or machine. A block knows how to couple with other blocks – and it even can modify itself to enable such coupling. The block can also tell the designer and the user about its cultural history – the sequence of historical borrowings which led to the present form. And if original Lego (or a typical twentieth century housing project) contains only a few kinds of blocks that make all objects one can design with Lego rather similar in appearance, computers can keep track of unlimited number of different blocks. At least, they can already keep track of all the possible samples we can pick from all cultural objects available today.

The standard twentieth century notion of cultural modularity involved artists, designers or architects making finished works from the small vocabulary of elemental shapes, or other modules. The scenario I am entertaining proposes a very different kind of modularity that may appear like a contradiction in terms. It is modularity without a priori defined vocabulary. In this scenario, any well-defined part of any finished cultural object can automatically become a building block for new objects in the same medium. Parts can even ‘publish’ themselves and other cultural objects can “subscribe” to them the way you subscribe now to RSS feeds or podcasts.

When we think of modularity today, we assume that a number of objects that can be created in a modular system is limited. Indeed, if we are building these objects from a very small set of blocks, there are a limited number of ways in which these blocks can go together. (Although as the relative physical size of the blocks in relation to the finished object get smaller, the number of different objects which can be built increases: think IKEA modular bookcase versus a Lego set.) However, in my scenario modularity does not involve any reduction in the number of forms that can be created. On the contrary, if the blocks themselves are created using one of many already developed computer designed methods (such as parametric design), every time they are used again they can modify themselves automatically to assure that they look different. In other words, if pre-computer modularity leads to repetition and reduction, post-computer modularity can produce unlimited diversity.

I think that such “real-time” or “on-demand” modularity can only be imagined today after online stores such as Amazon, blog indexing services such as Technorati, and architectural projects such as Yokohama International Port

Terminal by Foreign Office Architects and Walt Disney Concert Hall in Los Angeles by Frank Gehry visibly demonstrated that we can develop hardware and software to coordinate massive numbers of cultural objects and their building blocks: books, blog entries, construction parts. But whether we will ever have such a cultural ecology is not important. We often look at the present by placing it within long historical trajectories. But I believe that we can also productively use a different, complementary method. We can imagine what will happen if the contemporary techno-cultural conditions which are already firmly established are pushed to their logical limit. In other words, rather than placing the present in the context of the past, we can look at it in the context of a logically possible future. This “look from the future” approach may illuminate the present in a way not possible if we only “look from the past.” The sketch of logically possible cultural ecology I just made is a little experiment in this method: futurology or science fiction as a method of contemporary cultural analysis.

So what else can we see today if we will look at it from this logically possible future of complete remixability and universal modularity? If my scenario sketched above looks like a “cultural science fiction,” consider the process that is already happening on the one end of remixability continuum. Although strictly speaking it does not involve increasing modularity to help remixability, ultimately its logic is the same: helping cultural bits move around more easily. I am talking about a move in Internet culture today from intricately packaged and highly designed “information objects” which are hard to take apart – such as web sites made in Flash – to “strait” information: ASCII text files, feeds of RSS feeds, blog entries, SMS messages. As Richard MacManus and Joshua Porter put it, “Enter Web 2.0, a vision of the Web in which information is broken up into “microcontent” units that can be distributed over dozens of domains. The Web of documents has morphed into a Web of data. We are no longer just looking to the same old sources for information. Now we’re looking to a new set of tools to aggregate and remix microcontent in new and useful ways.”[3] And it is much easier to “aggregate and remix microcontent” if it is not locked by a design. Strait ASCII file, a JPEG, a map, a sound or video file can move around the Web and enter into user-defined remixes such as a set of RSS feeds; cultural objects where the parts are locked together (such as Flash interface) can’t. In short, in the era of Web 2.0, “information wants to be ASCII.”[4]

If we approach the present from the perspective of a potential future of “ultimate modularity / remixability,” we can see other incremental steps towards this future which are already occurring. For instance, Orange <[orange.blender.org](http://orange.blender.org)> (an animation studio in Amsterdam) has setup a team of artists and developers around the world to collaborate on an animated short film; the studio plans to release all of their production files, 3D models, textures, and animation as Creative Commons open content on an extended edition DVD.

Creative Commons offers a special set of Sampling Licenses which “let artists and authors invite other people to use a part of their work and make it new.”[5]

Flickr offers multiple tools to combine multiple photos (not broken into parts – at least so far) together: tags, sets, groups, Organizer. Flickr interface thus position each photo within multiple “mixes.” Flickr also offers “notes” which allows the users to assign short notes to individual parts of a photograph. To add a note to a photo posted on Flickr, you draw a rectangle on any part of the photo and then attach some text to it. A number of notes can be attached to the same photo. I read this feature as another a sign of modularity/remixability mentality, as it encourages users to mentally break a photo into separate parts. In other words, “notes” break a single media object – a photograph – into blocks.

In a similar fashion, the common interface of DVDs breaks a film into chapters. Media players such as iPod and online media stores such as iTunes break music CDs into separate tracks – making a track into a new basic unit of musical culture. In all these examples, what was previously a single coherent cultural object is broken into separate blocks that can be accessed individually. In other words, if “information wants to be ASCII,” “contents wants to be granular.” And culture as a whole? Culture has always been about remixability – but now this remixability is available to all participants of Internet culture.

Since the introduction of first Kodak camera, “users” had tools to create massive amounts of vernacular media. Later they were given amateur film cameras, tape recorders, video recorders...But the fact that people had access to “tools of media production” for as long as the professional media creators until recently did not seem to play a big role: the amateur’ and professional’ media pools did not mix. Professional photographs traveled between photographer’s darkroom and newspaper editor; private pictures of a wedding traveled between members of the family. But the emergence of multiple and interlinked paths which encourage media objects to easily travel between web sites, recording and display devices, hard drives, and people changes things. Remixability becomes practically a built-in feature of digital networked media universe. In a nutshell, what maybe more important than the introduction of a video iPod, a consumer HD camera, Flickr, or yet another exiting new device or service is how easy it is for media objects to travel between all these devices and services - which now all become just temporary stations in media’s Brownian motion.

## We Have Never Been Modular [6]

While the topics of remixability and modularity are connected, it is important to note that modularity is something which does not only apply to RSS, social bookmarking, or Web Services. We are talking about the logic which extends beyond the Web and digital culture.

Modularity has been the key principle of modern mass production. Mass production is possible because of the standardisation of parts and how they fit with

each other - i.e. modularity. Although there are historical precedents for mass production, until twentieth century they have separate historical cases. But soon after Ford installs first moving assembly lines at his factory in 1913, others follow, and soon modularity permeates most areas of modern society. ("An assembly line is a manufacturing process in which interchangeable parts are added to a product in a sequential manner to create an end product.") Most products we use are mass produced, which means they are modular, i.e. they consist from standardised mass produced parts which fit together in standardised way. Moderns also applied modularity principle outside of factory. For instance, already in 1932 – long before IKEA and Lego sets – Belgian designer Louis Herman De Kornick developed first modular furniture suitable for smaller council flats being built at the time.

Today we are still living in an era of mass production and mass modularity, and globalisation and outsourcing only strengthen this logic. One commonly evoked characteristic of globalisation is greater connectivity – places, systems, countries, organisations etc, becoming connected in more and more ways. Although there are ways to connect things and processes without standardizing and modularizing them – and the further development of such mechanisms is probably essential if we ever want to move beyond all the grim consequences of living in a standardized modular world produced by the twentieth century – for now it is much easier just to go ahead and apply the twentieth century logic. Because society is so used to it, it's not even thought of as one option among others.

Last week I was at a Design Brussels event where the designer Jerszy Seymour speculated that once Rapid Manufacturing systems become advanced, cheap and easy, this will give designers in Europe a hope for survival. Today, as soon as some design becomes successful, a company wants to produce it in large quantities – and its production goes to China. Seymour suggested that when Rapid Manufacturing and similar technologies would be installed locally, the designers can become their own manufacturers and everything can happen in one place. But obviously this will not happen tomorrow, and it's also not at all certain that Rapid Manufacturing will ever be able to produce complete finished objects without any humans involved in the process, whether its assembly, finishing, or quality control.

Of course, modularity principle did not stay unchanged since the beginning of mass production a hundred years ago. Think of just-in-time manufacturing, just-in-time programming or the use of standardized containers for shipment around the world since the 1960s (over 90% of all goods in the world today are shipped in these containers). The logic of modularity seems to be permeating more layers of society than ever before, and computers – which are great at keeping track of numerous parts and coordinating their movements – only help this process.

The logic of culture often runs behind the changes in economy – so while modularity has been the basis of modern industrial society since the early twentieth century, we only start seeing the modularity principle in cultural production and distribution on a large scale in the last few decades. While Adorno and Horkheimer were writing about "culture industry" already in the 1940s, it was not then - and it's not today - a true modern industry.[7] In some areas such as production of Hollywood animated features or computer games we see more of the factory logic at work with extensive division of labor. In the case of software engineering (i.e. programming), software is put together to a large extent from already available software modules - but this is done by individual programmers or teams who often spend months or years on one project – quite different from Ford production line assembling one identical car after another. In short, today cultural modularity has not reached the systematic character of the industrial standardisation circa 1913.

But this does not mean that modularity in contemporary culture simply lags behind industrial modularity, responsible for mass production. Rather, cultural modularity seems to be governed by a different logic than industrial modularity. On the one hand, "mass culture" is made possible by a complete industrial-type modularity on the levels of packaging and distribution. In other words, all the materials carriers of cultural content in the modern period have been standardised, just as it was done in the production of all goods - from first photo and films formats in the end of the nineteenth century to game cartridges, DVDs, memory cards, interchangeable camera lenses, etc. But the actual making of content was never standardised in the same way.[8] So while mass culture involves putting together new products – films, television programs, songs, games – from a limited repertoire of themes, narratives, icons using a limited number of conventions, this is done by the teams of human authors on a one by one basis. And while more recently we see the trend toward the reuse of cultural assets in commercial culture, i.e. media franchising – characters, settings, icons which appear not in one but a whole range of cultural products – film sequels, computer games, theme parks, toys, etc. – this does not seem to change the basic "pre-industrial" logic of the production process. For Adorno, this individual character of each product is part of the ideology of mass culture: "Each product affects an individual air; individuality itself serves to reinforce ideology, in so far as the illusion is conjured up that the completely reified and mediated is a sanctuary from immediacy and life." [9]

On the other hand, what seems to be happening is that the "users" themselves have been gradually "modularising" culture. In other words, modularity has been coming into modern culture from the outside, so to speak, rather than being built-in, as in industrial production. In the 1980s musicians start sampling already published music; TV fans start sampling their favorite TV series to produce their own "slash films," game fans start creating new game levels and all other kinds of game modifications. (Mods "can include new items, weapons, characters, enemies, models, modes, textures, levels, and story lines.") And of course, from

the very beginning of mass culture in early twentieth century, artists have immediately starting sampling and remixing mass cultural products – think of Kurt Schwitters, collage and particularly photomontage practice which becomes popular right after WWI among artists in Russia and Germany. This continued with Pop Art, appropriation art, and video art.

Enter the computer. In *The Language of New Media* I named modularity as one of the principles of computerised media. If before modularity principle was applied to the packaging of cultural goods and raw media (photo stock, blank videotapes, etc.), computerization modularizes culture on a structural level. Images are broken into pixels; graphic designs, film and video are broken into layers. Hypertext modularises text. Markup languages such as HTML and media formats such as QuickTime and MPEG-7 modularise multimedia documents in general. We can talk about what this modularisation already did to culture – think of World Wide Web as just one example - but this is a whole new conversation.

In short: in culture, we have been modular already for a long time already. But at the same time, “we have never been modular” - which I think is a very good thing.

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## NOTES

[1] “Approaching a definition of Web 2.0,” The Social Software Weblog <[socialsoftware.weblogsinc.com](http://socialsoftware.weblogsinc.com)>, accessed October 28, 2005.

[2] Ulf Poschardt, *DJ Culture*, trans. Shaun Whiteside (London: Quartet Books Ltd, 1998), 123.

[3] “Web 2.0 Design: Bootstrapping the Social Web,” Digital Web Magazine < [http://www.digital-web.com/types/web\\_2\\_design/](http://www.digital-web.com/types/web_2_design/)>, accessed October 28, 2005.

[4] Modern information environment is characterized by a constant tension between the desires to “package” information (Flash design for instance) and strip it from all packaging so it can travel easier between different media and sites.

[5] <http://creativecommons.org/about/sampling>, accessed October 31, 2005.

[6] [ The definitions of terms which appear in quotes in this text are from [en.wikipedia.org](http://en.wikipedia.org).



[7]Theodor W. Adorno and Max Horkheimer. *The Culture Industry. Enlightenment as Mass Deception*, 1947.

[8]In “Culture industry reconsidered,” Adorno writes: “the expression “industry” is not to be taken too literally. It refers to the standardization of the thing itself — such as that of the Western, familiar to every movie-goer — and to the rationalization of distribution techniques, but not strictly to the production process... it [culture industry] is industrial more in a sociological sense, in the incorporation of industrial forms of organization even when nothing is manufactured — as in the rationalization of office work — rather than in the sense of anything really and actually produced by technological rationality.” Theodor W. Adorno, “Culture Industry Reconsidered,” *New German Critique*, 6, Fall 1975, pp. 12-19.

[9]*Ibid.*