PART 3: Webware

Chapter 5. What Comes After Remix?

Introduction

It is always more challenging to think theoretically about the present than the past. But this challenge is what also makes it very exiting.

In Part 2 we looked at the interface and tools of professional media authoring software that were largely shaped in the 1990s. While each major release of Photoshop, Flash, Maya, Flame, and other commonly used applications continues to introduce dozens of new features and improvements, in my view these are incremental improvements rather than new paradigms.

The new paradigms that emerge in the 2000s are not about new types of media software per ce. Instead, they have to with the exponential expansion of the number of people who now use it – and the web as a new universal platform for non-professional media circulation. "Social software," "social media," "user-generated content," "Web 2.0," "read/write Web" are some of the terms that were coined in this decade to capture these developments.

If visual communication professionals have adopted software-based tools and workflows throughout the 1990s, in the next decade "media consumers" were gradually turned into "media producers." The decline in prices and increase in the media capabilities of consumer electronics (digital cameras, media players, mobile phones, laptops) combined with the ubiquity of the internet access combined with the

emergence of new social media platforms have created a whole new media ecology and dynamics. In retrospect, if we can designate 1995 as the year of professional media revolution (for example, version 3 of After Effects released this year added Illustrator and Photoshop layers import), I would center consumer media revolution on 2005. During this year, photo and video blogging have exploded; the term "user-generated content" entered mainstream; YouTube was started; and both Flickr was bought by Yahoo, while MySpace wer acquired by larger companies (Yahoo and Rupert Murdoch's News Corporation, respectively.)

If the professional media revolution of the 1990s can be identified with a small set of software applications, the cultural software which enables new media ecology emerging in the middle of 2000s is much more diverse and heterogeneous. Media sharing sites (Flickr), social networking sites (Facebook), webware such as Google Docs, APIs of major Web 2.0 companies, RSS readers, blog publishing software (Blogger), virtual globes (Google Earth, Microsoft Virtual Earth), consumer-level media editing and cataloging software (iPhoto), media and communication software running on mobile phones and other consumer electronics devices, and, last but not least, search engines are just some of the categories. (Of course, each brand name appearing in brackets in the preceding sentence is just one example of a whole software category.) Add to these other software categories which are not directly visible to consumers but which are responsible for networked-based media universe of sharing, remixing, collaboration, blogging, reblogging, and so on – everything from web services and client-server architecture to Ajax and Flex – and the task of tracking cultural software today appears to be daunting. But not impossible.

The two chapters of this part of the book consider different dimensions of the new paradigm of user-generated content and media sharing which emerged in 2000s. As before, my focus is on the relationships

between the affordances provided by software interfaces and tools, the aesthetics and structure of media objects created with their help, and the theoretical impact of software use on the very concept of media. (In other words: what is "media" after software?) One key difference from Part 2, however, is that instead of dealing with separate media design applications, we now have to consider larger media environments which integrates the functions of creating media, publishing it, remixing other people' media, discussing it, keeping up with friends and interest groups, meeting new people, and so on.

I look at the circulation, editing and experience of media as structured by web interfaces. Given that the term *remix* has already been widely used in discussing social media, I use it as a starting point in my own investigation. Similarly to how I did this in the discussion of software-based media design in Part 2, here I am also interested in both revealing the parallels and highlighting the differences between "remix culture" in general and software-enabled remix operations in particular. (If we don't do this and simply refer to everything today as "remix," we are not really trying to explain things anymore – we are just labeling them.) I also discuss other crucial dimensions of the new universe of social media: *modularity* and *mobility*. (Mobility here refers not to the movement of individuals and groups or accessing media from mobile devices, but to something else which so far has not been theoretically acknowledged: *the movement of media objects between people, devices, and the web*.)

I continue by examining some of the new types of user-to-user visual media communication which emerged on social media platforms. I conclude by asking how the explosion of user-generated content challenges professional cultural producers – not the media industries (since people in the industry, business and press are already discussing this all the time) - but rather another cultural industry which

has been the slowest to respond to the social web – professional art world.

Given the multitude of terms already widely used describe the new developments of 2000s and the new concepts we can develop to fill the gaps, is there a single concept that would sum it all? The answers to this question would of course vary widely, but here is mine. For me, this concept is *scale*. The exponential growth of a number of both non-professional and professional media producers during 2000s has created a fundamentally new cultural situation. Hundreds of millions of people are routinely created and sharing cultural content (blogs, photos, videos, online comments and discussions, etc.). This number is only going to increase. (During 2008 the number of mobile phones users' is projected to grow from 2.2 billion to 3 billion).

A similar explosion in the number of media professionals has paralleled this explosion in the number of non-professional media producers. The rapid growth of professional, educational, and cultural institutions in many newly globalized countries, along with the instant availability of cultural news over the web, has also dramatically increased the number of "culture professionals" who participate in global cultural production and discussions. Hundreds of thousands of students, artists and designers now have access to the same ideas, information and tools. It is no longer possible to talk about centers and provinces. In fact, the students, culture professionals, and governments in newly globalized countries are often more ready to embrace latest ideas than their equivalents in "old centers" of world culture.

Before, cultural theorists and historians could generate theories and histories based on small data sets (for instance, "classical Hollywood cinema," "Italian Renaissance," etc.) But how can we track "global digital culture" (or cultures), with its billions of cultural objects, and hundreds of millions of

contributors? Before you could write about culture by following what was going on in a small number of world capitals and schools. But how can we follow the developments in tens of thousands of cities and educational institutions?

If the shift from previous media technologies and distribution platforms to software has challenged our most basic concepts and theories of "media," the new challenge in my view is even more serious. Let's say I am interested in thinking about cinematic strategies in user-generated videos on YouTube. There is no way I can manually look through all the billions of videos there. Of course, if I watch some of them, I am likely to notice some patterns emerging.. but how do I know which patterns exist in all the YouTube videos I never watched? Or, maybe I am interested in the strategies in the works of design students and young professionals around the world. The data itself is available: every design school, studio, design professional and a student have their stuff on the web. I can even consult special web sites such as colorflot.com that contains (as of this writing) over 100,000 design portfolios submitted by designers and students from many countries. So how do I go about studying 100,000+ portfolios?

I don't know about you, but I like challenges. In fact, my lab is already working on how we can track and analyze culture at a new scale that involve hundreds of millions of producers and billions of media objects. (You can follow our work at softwarestudies.com and culturevis.com.) The first necessary step, however, is to put forward some conceptual coordinates for the new universe of social media – an initial set of hypothesis about its new features which later can be improved on.

And this is what this chapter is about. Let's dive in.

"The Age of Remix"

It is a truism that we live in a "remix culture." Today, many cultural and lifestyle arenas - music, fashion, design, art, web applications, user created media, food - are governed by remixes, fusions, collages, and mash-ups. If post-modernism defined 1980s, remix definitely dominates 1990s and 2000s, and it will probably continue to rule the next decade as well. (For an expanding resource on remix culture, visit remixtheory.net by Eduardo Navas.) Here are just a few examples. In his winter collection John Galliano (a fashion designer for the house of Dior) mixes vagabond look, Yemenite traditions, East-European motifs, and other sources that he collects during his extensive travels around the world (2004 collection). DJ Spooky creates a feature-length remix of D.W. Griffith's 1912 "Birth of a Nation" which he appropriately names "Rebirth of a Nation." The group BOOM BOOM SATELLITES initiates a remix competition aimed at bringing together two cultures: "the refined video editing techniques of AMV enthusiasts" and "the cutting-edge artistry of VJ Culture" (2008).[150] The celebrated commentator on copyright law and web culture Lawrence Lessig names his new book *Remix: Making Art and Commerce Thrive in the Hybrid Economy* (2008.)

The Web in particular has become a breeding ground for variety of new remix practices. In April 2006 Annenberg Center at University of Southern California run a conference on "Networked Politics" which put forward a useful taxonomy of some of these practices: political remix videos, anime music videos, machinima, alternative news, infrastructure hacks.[151] In addition to these cultures that remix media content, we also have a growing number of "software mash-ups," i.e. software applications that remix data. (In case you skipped Part 1, let me remind you that, in Wikipedia definition, a mash-up as "a website or application that combines content from more than one source into an integrated experience."[152] As of March 1, 2008, the web site www.programmableweb.com listed the total of 2814

software mash-ups, and approximately 100 new mash-ups were created every month.[153]

Yet another type of remix technology popular today is RSS. With RSS, any information source which is periodically updated – a personal blog one's collection of photos on Flickr, news headlines, podcasts, etc. – can be published in a standard format, i.e., turned into a "feed.") Using RSS reader, an individual can subsribe to such feeds - create her custom mix selected from many millions of feeds available. Alternatively, you can use widget-based feed readers such as iGoogle, My Yahoo, or Netvibes to create a personalized home page that mixes feeds, weather reports, Facebook friends updates, podcasts, and other types of information sources. (Appropriately, Netvibes includes the words "re(mix) the web" in its logo.)

Given the trends towards ubiquitous computing and "Internet of things," it is inevitable that remixing paradigm will make its way into physical space as well. Bruce Sterling's brilliant book *Shaping Things* describes a possible future scenario where objects publish detailed information about their history, use, and impact on the environment, and ordinary consumers track this information.[154] I imagine a future RSS reader may give you a choice of billions of objects to track. (If you were already feeling overwhelmed by 112 million blogs tracked by Technorati [xxx check the spelling] - as of December 2007 - this is just a beginning.[155])

For a different take on how a physical space – in this case, a city - can reinvent itself via remix, consider coverage of Buenos Aires by *The,* the journal by "trend and future consultancy" The Future Laboratory.[156] *The* enthusiastically describes the city in remix terms – and while the desire to project a fashionable term on everything in site is obvious, the result is actually mostly convincing. The copy reads as follows: "Buenos Aires has gone mash-up. The portefnos are adopting their traditions with some American sauce and European pepper." A local DJ

Villa Diamante released an album that "mixes electronic music with cumcia, South American peasant music." A clothing brand 12-na "mixes flea-market finds with modern materials. A non-profit publication project Eloisa Cartonea "combines covers painted by kids who collect the city's cardboard with the work of emerging writers and poets."

Remix practices extend beyond particular technologies and areas of culture. *Wired* magazine devoted its July 2005 issue to the theme Remix Planet. The introduction boldly stated: "From *Kill Bill* to Gorillaz, from custom Nikes to *Pimp My Ride*, this is the age of the remix."[157] Another top IT trend watcher in the world – the annual O'Reilly Emerging Technology conferences (ETECH) similarly adopted Remix as the theme for its 2005 conference. Attending the conference, I watched in amazement how top executives from Microsoft, Yahoo, Amazon, and other leading IT companies not precisely known for their avant-garde aspirations described their recent technologies and research projects using the concept of remix. If I had any doubts that we are living not simply in Remix Culture but in a Remix Era, they disappeared right at that conference.

Remix, Appropriation, Quotation, Montage

"Remixing" originally had a precise and a narrow meaning limited to music. Although precedents of remixing can be found earlier, it was the introduction of multi-track mixers that made remixing music 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 ounces. Gradually the term became more and more broad, today referring to any reworking of already existing cultural work(s).

In his book *DJ Culture* Ulf Poscardt singles out different stages in the evolution of remixing practice. In 1972 DJ Tom Moulton made his first disco

remixes; as Poscard points out, they "show a very chaste treatment of the original song. 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."[158] By 1987, "DJs started to ask other DJs for remixes" and the treatment of the original material became much more aggressive. For example, "Coldcut used the vocals from Ofra Hanza's 'Im Nin Alu' and contrasted Rakim's ultra-deep bass voice with her provocatively feminine voice. To this were added techno sounds and a house-inspired remix of a rhythm section that loosened the heavy, sliding beat of the rap piece, making it sound lighter and brighter."[159]

Around the turn of the century (20th to 21st) people started to apply the term "remix" to other media besides music: visual projects, software, literary texts. Since, in my view, electronic music and software serve as the two key reservoirs of new metaphors for the rest of culture today, this expansion of the term is inevitable; one can only wonder why it did no happen earlier. Yet we are left with an interesting paradox: while in the realm of commercial music remixing is officially accepted[160], in other cultural areas it is seen as violating the copyright and therefore as stealing. So while filmmakers, visual artists, photographers, architects and Web designers routinely remix already existing works, this is not openly admitted, and no proper terms equivalent to remixing in music exist to describe these practices.

One term that is sometimes used to talk about these practices in non-music areas is "appropriation." The term was first used to refer to certain New York-based "post-modern" artists of the early 1980s who re-worked older photographic images – Sherrie Levine, Richard Prince, Barbara Kruger, and a few others. But the term "appropriation" never achieved the same wide use as "remixing." In fact, in contrast

to "remix," "appropriation" never completely left its original art world context where it was coined. I think that "remixing" is a better term anyway because it suggests a systematic re-working of a source, the meaning which "appropriation" does not have. And indeed, the original "appropriation artists" such as Richard Prince simply copied the existing image as a whole rather than re-mixing it. As in the case of Duchamp's famous urinal, the aesthetic effect here is the result of a transfer of a cultural sign from one sphere to another, rather than any modification of a sign.

The other older term commonly used across media is "quoting" but I see it as describing a very different logic than remixing. If remixing implies systematically rearranging the whole text, quoting refers to inserting some fragments from old text(s) into the new one. Therefore, I don't think that we should see quoting as a historical precedent for remixing. Rather, we can think of it as a precedent for another new practice of authorship practice that, like remixing, was made possible by electronic and digital technology – sampling.

Music critic Andrew Goodwin defined sampling as "the uninhibited use of digital sound recording as a central element of composition. Sampling thus becomes an aesthetic programme."[161] It is tempting to say that the arrival of sampling technologies has industrialized the practices of montage and collage that were always central to twentieth century culture. Yet we should be careful in applying the old terms to new technologically driven cultural practices. While it is comforting to see the historical continuities, it is also too easy to miss new distinctive features of the present. The use of terms "montage" and "collage" in relation to the sampling and remixing practices is a case in point. These two terms regularly pop up in the writings of music theorists from Poscardt to DJ Spooky and Kodwo Eshun. (In 2004 Spooky published brilliant book *Rhythm Science*[162] which ended up on a number of "best 10 books of 2004" lists and which put forward

"unlimited remix" as the artistic and political technique of our time).

The terms "montage" and "collage" come to us from literary and visual modernism of the early twentieth century – think for instance of works by Moholy-Nagy, Sergey Eisenstein, Hannah Hooch or Raoul Hausmann. In my view, they do not always adequately describe contemporary electronic music. Let me note just three differences. Firstly, musical samples are often arranged in loops. Secondly, the nature of sound allows musicians to mix pre-existent sounds in a variety of ways, from clearly differentiating and contrasting individual samples (thus following the traditional modernist aesthetics of montage/collage), to mixing them into an organic and coherent whole. To borrow the terms from Roland Barthes we can say that if modernist collage always involved a "clash" of element, electronic and software collage also allows for "blend."[163] Thirdly, the electronic musicians now often conceive their works beforehand as something that will be remixed, sampled, taken apart and modified. In other words, rather than sampling from mass media to create a unique and final artistic work (as in modernism), contemporary musicians use their own works and works by other artists in further remixes.

It is relevant to note here that the revolution in electronic pop music that took place in the second part of the 1980s was paralleled by similar developments in pop visual culture. The introduction of electronic editing equipment such as switcher, keyer, paintbox, and image store made remixing and sampling a common practice in video production towards the end of the decade. First pioneered in music videos, it eventually later took over the whole visual culture of TV. Other software tools such as Photoshop (1989) and After Effects (1993) had the same effect on the fields of graphic design, motion graphics, commercial illustration and photography. And, a few years later, World Wide Web redefined an electronic document as a mix of other documents. Remix culture has arrived.

The question that at this point is really hard to answer is what comes after remix? Will we get eventually tired of cultural objects - be they dresses by Alexander McQueen, motion graphics by MK12 or songs by Aphex Twin – made from samples which come from already existing database of culture? And if we do, will it be still psychologically possible to create a new aesthetics that does not rely on excessive sampling? When I was emigrating from Russia to U.S. in 1981, moving from grey and red communist Moscow to a vibrant and post-modern New York, me and others living in Russia felt that Communist regime would last for at least another 300 years. But already ten years later, Soviet Union caused to exist. Similarly, in the middle of the 1990s the euphoria unleashed by the Web, collapse of Communist governments in Eastern Europe and early effects of globalization created an impression that we have finally Cold War culture behind – its heavily armed borders, massive spying, and the military-industrial complex. And once again, only ten years later it appeared that we are back in the darkest years of Cold War - except that now we are being tracked with RFID chips, computer vision surveillance systems, data mining and other new technologies of the twenty first century. So it is very possible that the remix culture, which right now appears to be so firmly in place that it can't be challenged by any other cultural logic, will morph into something else sooner than we think.

I don't know what comes after remix. But if we now try now to develop a better historical and theoretical understanding of remix era and the technological platforms which enable it, we will be in a better position to recognize and understand whatever new era which will replace it.

Communication in a "Cloud"

During 2000s remix gradually moved from being one of the options to being treated as practically a new cultural default. The twentieth century paradigm in

which a small number of professional producers send messages over communication channels that they also controlled to a much larger number of users was replaced by a new paradigm.[164] In this model, *a much large number of producers publish content into "a global media cloud"; the users create personalized mixes by choosing from this cloud.*[165] A significant percentage of these producers and users overlap - i.e. they are the same people. Furthermore, a user can also select when and where to view her news – a phenomenon that has come to be known as "timeshifting" and "placeshifting." Another feature of the new paradigm, which I will discuss in detail below, is what I call "media mobility." A message never arrives at some final destination as in broadcasting / mass publishing model. Instead, a message continues to move between sites, people, and devices. As it moves, it accumulates comments and discussions. Frequently, its parts are extracted and remixed with parts of other messages to create new messages.

The arrival of a new paradigm has been reflected in and supported by a set of new terms. Twentieth century terms "broadcasting" and "publishing" and "reception" have been joined (and in many contexts, replaced), by new terms that describe new operations now possible in relation to media messages. They include "embed," "annotate," "comment," "respond," "syndicate," "aggregate," "upload," "download," "rip," and "share."

There are a number of interesting things worth noting in relation to this new vocabulary, Firstly, the new terms are more discriminating than the old ones as they now name many specific operations involved in communication. You don't simply "receive" a message; you can also annotate it, comment on it, remix it, etc. Secondly, most of the new terms describe new types of users' activities which were either not possible with the old media or were strictly marginal (For instance, a marginal practice of "slash" videos made by science fiction fans.) Thirdly, if old terms such as "read," "view" and "listen" were

media-specific, the new ones are not. For instance, you can "comment" on a blog, a photo, a video, a slide show, a map, etc. Similarly, you can "share" a video, a photo, an article, a map layer, and so on. This media-indifference of the terms indirectly reflects the media-indifference of the underlying software technologies. (As I have already discussed in depth earlier, the important theme in the development of cultural software has been the development of new information management principles and techniques – such as Englebardt's "view control" – which work in the same way on many types of media.)

Among these new terms, "remix" (or "mix") occupies a major place. As the user-generated media content (video, photos, music, maps) on the Web exploded in 2005, an important semantic switch took place. The terms "remix" (or "mix") and "mashup" started to be used in contexts where previously the term "editing" had been standard – for instance, when referring to a user editing a video. When in the spring of 2007 Adobe released video editing software for users of the popular media sharing web site Photobucket, it named the software Remix. (The software was actually a stripped down version of one of the earliest video editing applications for PCs called Premiere.[166]) Similarly, Jumpcut, a free video editing and hosting site, does not use the word "edit."[167] Instead, it puts forward "remix" as the core creative operation: "You can create your own movie by remixing someone else's movie." Other online video editing and hosting services which also use the term "remix", or "mashup" instead of "edit" (and which existed at least when I was writing this chapter in the Spring 2008) include eyespot and Kaltura.[168]

The new social communication paradigm where millions are publishing "content" into the "cloud" and an individual curates her personal mix of content drawn from this cloud would be impossible without new types of consumer applications, new software features and underlying software standards and

technologies such as RSS. To make a parallel with the term "cloud computing," we can call this paradigm "communication in a cloud." If "cloud computing" enables users and developers to utilize [IT] services without knowledge of, expertise with, nor control over the technology infrastructure that supports them,"[169] software developments of 2000s similarly enable content creators and content receivers to communicate without having to deeply understand underlying technologies.

Another reason why a metaphor of a " cloud" – which at first appears vague – may also be better for describing communication patterns communication in 2000s than the "web" has changed do with the changes in the patterns of information flow between the original Web and so-called Web 2.0. In the original web model, information was published in the form of web pages collected into web sites. To receive information, a user had to visit each site individually. You could create a set of bookmarks for the sites you wanted to come back to, or a separate page containing the links to these sites (so-called "favorites") - but this was all. The lack of a more sophisticated technology for "receiving" the web was not an omission on the part of the web's architect Tim Berners-Lee – it is just that nobody anticipated that the number of web sites will explode exponentially. (This happened after first graphical browsers were introduced in 1993. In 1998 First Google index collected 26 million pages; in 2000 it already had one billion; on June 25, 2008, Google engineers announced on Google blog that they collected one trillion unique URLs…[170])

In the new communication model that has been emerging after 2000, information is becoming more *atomized*. *You can access individual atoms of information without having to read/view the larger packages in which it is enclosed* (a TV program, a music CD, a book, a web site, etc.) Additionally, *information is gradually becoming presentation and device independent* – it can be received using a variety of software and hardware technologies and

stripped from its original format. Thus, while web sites continue to flourish, it is no longer necessary to visit each site individually to access their content. With RSS and other web feed technologies, any periodically changing or frequently updated content can be syndicated (i.e., turned into a feed, or a channel), and any user can subscribe to it. Free blog software such as Blogger and WordPress automatically create RSS feeds for elements of a blog (posts, comments). Feeds can be also be created for parts of web sites (using tools such as feedity.com), weather data, search results, Flickr's photo galleries, YouTube channels, and so on. For instance, let's say you go and register for a Flickr account. After you do that, Flickr automatically creates a feed for your photos. So when you upload photos to your Flickr account – which you can do from your laptop, mobile phone or (in some cases) directly from a digital camera – people who subscribed to your feed will automatically get all your new photos.

The software technologies used to send information into the cloud are complemented by software that allows people to curate (or "mix") the information sources they are interested in. Software in this category is referred to as newsreaders, feed readers, or aggregators. Examples include separate web-based feed readers such as Bloglines and Google Reader; all popular web browsers that also provide functions to read feeds; desktop-based feed-readers such as NetNewsWire; and personalized home pages such as live.com, iGoogle, my Yahoo!

Finally, If feed technologies turned the original web of interlinked web pages sites into a more heterogeneous and atomized global "cloud" of content, other software developments helped to make this cloud rapidly grow in size.[171] It is not accidental that during the period when "user generated media" started to grow exponentially, the interfaces of most consumer-level media applications came to prominently feature buttons and options which allow for to move new media documents into the "cloud" – be they PowerPoint presentations, PDF

files, blog posts, photographs, video, etc. For example, iPhoto '08 groups functions which allow the user to email photos, or upload them to her blog or website (under a top level "Share" menu). Similarly, Windows Live Photo Gallery includes "Publish" and "E-mail" among its top menu bar choices. Meanwhile, the interfaces of social media sites were given buttons to easily move content around the "cloud," so to speak – emailing it to others, embedding it in one's web site or blog, linking it, posting to one's account on other popular social media sites, etc.

Regardless of how easy it is to create one personal mix of information sources – even if only takes a single click – the practically unlimited number of these sources now available in the "cloud" means that manual ways of selecting among these sources become limited in value. Enter the automation. From the very beginning, computers were used to automate various processes. Over time, everything - factory work, flying planes, financial trading, or cultural processes - is gradually subjected to automation.[172] However, algorithmic automated reasoning on the Web arrived so quickly that it hardly even been publically discussed. We take it for granted that Google and other search engines automatically process tremendous amounts of data to deliver search results. We also take it for granted that Google's algorithms automatically insert ads in web pages by analyzing pages' content. Flickr uses its own algorithm to select the photos it calls "interesting."[173] Pandora, Musicovery, OWL music search, and many other similar web services automatically create music programs based on the users' musical likes. Digg automatically pushes the stories up based on how many people have voted for them. Amazon and Barnes & Noble use collaborative filtering algorithms to recommend books; Last.fm and iTunes – to recommend music, Netflix – to recommend movies; StumbleUpon – to recommend websites; and so on.[174] (iTunes 8 calls its automation feature Genius sidebar; it is designed to make "playlists in your song library that go great together" and also to recommend "music from the iTunes

Stores that you don't already have.) In contrast to these systems which provide recommedations by looking at the users which have similar rating patterns, Mufin is fully automatic recommendatio system for music which works by matching songs based on 40 attributes such as tempo, instruments, and percussion.[175]

As I write this in the summer of 2008, the use of automation to create mixes from hundreds of millions information sources is just beginning. One already popular service is Google News site that algorithmically assembles "news" by remixing material gathered from thousands of news publications. (As it is usually the case with algorithms used by web companies, when I checked last there was no information on the Google News web site about the algorithm used, so we know nothing about its selection criteria or what counts as important and relevant news.) Newspond similarly automatically aggregates news, and it similarly discloses little about the process. According to its web site, "Newspond's articles are found and sorted by real-time global popularity, using a fully automated news collection engine."[176] Spotplex assembles news from blogosphere using yet another type of automation: counting most read articles within a particular time frame.[177] Going further, news.ask.com not only automatically selects the news but it also provides BigPicture pages for each news story containing relevant articles, blog posts, images, videos, and diggs.[178] News.ask.com also tells us that it selects news stories based on four factors – breaking, impact, media, and discussion – and it actually shows how each story rates in terms of these factors Another kind of algorithmic "news remix" is performed by the web-art application 10x10 by Jonathan Harris. It presents a grid of news images based on the algorithmic analysis of news feeds from *The New York Times*, the BBC, and Reuters.[179]

Remixability And Modularity

The dramatic increase in quantity of information greatly speeded up by the web 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 buttons in email applications, 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."[180]

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 later 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 remixability as practiced by designers and other culture professionals is quite different from "vernacular" remixability made possible by the software-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 – professional and vernacular - are part of the same continuum. For the designer and musician (to continue with the sample example) are equally affected by the same software technologies. Design software and music composition software make the technical operation of remixing very easy; the web 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 fashion, 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 two weeks, this is an example of the same cultural remixability speeded up by software and the web. 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 (i.e., organization of a cultural objects into clearly separable parts) - but it greatly benefits from it. For example, as already discussed above, remixing in music really took after the introduction of multi-track equipment. With each song element available on its own track, it was not long before substituting tracks become commonplace.

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 design for a corporate report or an ad may use photographs that the designer purchased 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, software can keep track of unlimited number of different blocks.

One popular twentieth century notion of cultural modularity involved artists, designers or architects making finished works from the small vocabulary of elemental shapes, or other modules. Whether we are talking about construction industry, Kandinsky's geometric abstraction, or modular furniture systems, the underlying principle is the same. 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 imaginary scenario modularity does not involve any reduction

in the number of forms that can be generated. On the contrary, if the blocks themselves are created using one of many already developed software-based 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-software modularity leads to repetition and reduction, post-software modularity can produce unlimited diversity.

I think that such "real-time" or "on-demand" modularity can only be imagined today after various large-scale projects created at the turn of the century - online stores such as Amazon, blog indexing services such as Technorati, buildings 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, bog entries, construction parts. 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 a 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 a "total remixability" and universal modularity? If my scenario sketched above looks like a "cultural science fiction," consider the process that is already

happening at one end of remixability continuum. This process is gradual atomization of information on the web that we already touched on earlier in this chapter. New software technologies separate content from particular presentation formats, devices, and the larger cultural "packages" where it is enclosed by the producers. (For instance, consider how iTunes and other online music stores changed the unit of music consumption from a record/CD to a separate music track.) In particular, wide adoption and standardization of feed formats allows cultural bits to move around more easily – changing a web into what I called a "communication cloud." The increased modularity of content allowed for a wide adoption of remix as a preferred way of receiving it (although, as we saw, in many cases it is more appropriate to call the result a collection rather than a true remix.)

The Web was invented by the scientists for scientific communication, and at first it was mostly text and "bare-bones" HTML. Like any other markup language, HTML was based on the principle of modularity (in this case, separating content from its presentation). And of course, it also brought a new and very powerful form of modularity: the ability to construct a single document from parts that may reside on different web servers. During the period of web's commercialization (second part of the 1990s), twentieth century media industries that were used to producing highly structured information packages (books movies, records, etc.) similarly pushed the web towards highly coupled and difficult to take apart formats such as Shockwave and Flash. However, since approximately 2000, we see a strong move in the opposite direction: from intricately packaged and highly designed "information objects" (or "packages") which are hard to take apart – such as web sites made in Flash – to "strait" information: ASCII text files, RSS feeds, blog posts, KML files, SMS messages, and microcontent. As Richard MacManus and Joshua Porter put it in 2005, "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."[181] And it is much easier to "aggregate and remix microcontent" if it is not locked by a design. An ASCII file, a JPEG image, a map, a sound or video file can move around the Web and enter into user-defined remixes such as a set of RSS feed subscriptions; cultural objects where the parts are locked together (such as Flash interface) can't. In short, in the era of Web 2.0, we can state that *information wants to be ASCII*.

This very brief and highly simplified history of the web does not do justice to many other important trends in web evolution. But I do stand by its basic idea. That is, a contemporary "communication cloud" is characterized by a constantly present tension between the desires to "package" information (for instance, use of Flash to create "splash" web pages) and to strip it from all packaging so it can travel easier between different sites, devices, software applications, and people. Ultimately, I think that in the long run, the future will belong to the word of information that is more atomized and more modular, as opposed to less. The reason I think that is because we can observe a certain historical correspondence between the structure of cultural "content" and the structure of the media that carries it. Tight packaging of the cultural products of mass media era corresponds to the non-discrete materiality of the dominant recording media – photographic paper, film, and magnetic tape used for audio and later video recording. In contrast, the growing modularity of cultural content in the software age perfectly corresponds the systematic modularity of modern software which manifest itself on all levels: "structured programming" paradigm, "objects" and "methods" in object-oriented programming paradigm, modularity of Internet and web protocols and formats, etc. – all the way to the

bits, bytes, pixels and other atoms which make up digital representations in general.

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.

Creative Commons developed a set of flexible licenses that give the producers of creative work in any field more options than the standard copyright terms. The licenses have been widely used by individuals, non-profits and companies – from MIT Open Course Initiative and Australian Government to Flickr and blip.tv. The available types include a set of Sampling Licenses which "let artists and authors invite other people to use a part of their work and make it new."[182]

In 2005 a team of artists and developers from around the world set out to collaborate on an animated short film *Elephants Dream* using only open source software[183]; after the film was completed, all production files from the move (3D models, textures, animations, etc.) were published on a DVD along with the film itself.[184]

Flickr offers multiple tools to combine multiple photos (not broken into parts – at least so far) together: tags, sets, groups, Organizr. 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 phone 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 paradigm, 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," "content wants to be modular." And culture as a whole? Culture has always been about remixability – but now this remixability is available to all participants of web 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 flash drives, and, most importantly, 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 (2001), YouTube (2005), first consumer 3-CCD camera which can record full HD video (HD Everio GZ-HD7, 2007), 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.

Modularity and "Culture Industry"

Although we see a number of important new types of cultural modularity emerged in software era, it is important to remember that modularity is something that only applies to RSS, social bookmarking, or Web Services. We are talking about the larger cultural logic that extends beyond the Web and digital culture.

Modularity has been the key principle of modern mass production. That is, mass production is possible because of the standardization 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 been separate historical cases. But after Ford installs first moving assembly lines at his factory in 1913, others follow. ("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."[185]) Soon modularity permeates most areas of modern society. The great majority of products we use today are mass produced, which means they are modular, i.e. they consist from standardized mass produced parts which fit together in standardized way. But modularity was also taken up outside of factory. For instance, already in 1932 – long before IKEA and Logo 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 leaving in an era of mass production and mass modularity, and globalization and outsourcing only strengthen this logic. One commonly evoked characteristic of globalization is greater connectivity – places, systems, countries, organizations, 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 appears so much easier just to go ahead and apply the twentieth

century logic. Because society is so used to it, it is not even thought of as one option among others.

In November 205 I was at a Design Brussels event where a well-known 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 Seymour pointed out, as soon as some design becomes successful, a company wants to produce it in large quantities – and its production goes to China. He suggested that when Rapid Manufacturing and similar technologies would be installed locally, the designers can become their own manufactures and everything can happen in one place. But obviously this will not happen tomorrow, and it is 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 stayed 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 software – which is great to keeping track of numerous parts and coordinating their movements – only help this process.

The logic of culture often runs behind the changes in economy (recall the concept of "uneven development" I already evoked in Part 2) – 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 early 1940s, it was not then - and it is not today - a true

modern industry.[186] In some areas such as large-scale 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, 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 model used assembling one identical car after another in rapid succession. In short, today cultural modularity has not reached the systematic character of the industrial standardization circa 1913.

But this does not mean that modularity in contemporary culture simply lags behind industrial modularity. Rather, cultural modularity seems to be governed by a different logic. In terms of packaging and distribution, "mass culture" has indeed achieved complete industrial-type standardization. In other words, all the material carriers of cultural content in the 20th century have been standardized, just as it was done in the production of all other goods - from first photo and films formats in the end of the nineteenth century to game cartridges, DVDs, memory cards, interchangeable camera lenses, and so on today. But the actual making of content was never standardized in the same way. 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.[187]

So while culture industries, at their worst, continuously put out seemingly new cultural products

(fims, television programs, songs, games, etc.) which are created from a limited repertoire of themes, narratives, icons and other elements using a limited number of conventions, these products are conceived by the teams of human authors on a one-by-one basis – not by software. In other words, while software has been eagerly adopted to help automate and make more efficient lower levels of the cultural production (such as generating in-between frames in an animation or keeping track of all files in a production pipeline), humans continue to control the higher levels. Which means that the semiotic modularity of cultural industries' products – i.e., their Lego-like construction from mostly pre-existent elements already familiar to consumers – is not something which is acknowledged or thought about.

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 this 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."[188]

Neither fundamental re-organization of culture industries around software-based production in the 1990s nor the rise of user-generated content and social media paradigms in 2000s threatened the Romantic ideology of an artist-genius. However, what seems to be happening is that the "users" themselves have been gradually "modularizing" culture. In other words, modularity has been coming into mass 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, or "mods". (Mods "can include new items, weapons, characters, enemies, models, modes, textures, levels, and story lines."[189]) 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, video art, net art...

Enter the computer. In *The Language of New Media* I named modularity as one of the trends I saw in a culture undergoing computerization. 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 in Photoshop, After Effects, and other media design software. Hypertext modularizes text. Markup languages such as HTML and media formats such as QuickTime modularize multimedia documents in general. This all already happened by 1999 when I was finishing *The Language of New Media*; as we saw in this chapter, soon thereafter the adoption of web feed formats such as RSS further modularized media content available on the web, breaking many types of packaged information into atoms…

In short: in culture, we have been modular already for a long time already. But at the same time, "we have never been modular"[190] - which I think is a very good thing.

Chapter 6. Social Media: Tactics as Strategies

From Mass Consumption to Mass (Cultural) Production

The evolution of cultural software during 2000s is closely linked to from the rise a web as the platform for media publishing, sharing, and social communication. The key event in this evolution has been the shift from the original web to the so-called Web 2.0 (the term was introduced by Tim O'Reilly in 2004.) This term refers to a number of different technical, economical, and social developments which were given their own terms: *social media*, *user-generated content*, *long tail*, *network as platform*, *folksonomy*, *syndication*, *mass collaboration*, etc. We have already discussed a number of these developments directly or indirectly in relation to the topics of remixability and modularity. What I want to do now is to approach them from a new perspective. I want to ask how the phenomena of social media and user-generated content reconfigure the relationships between cultural "amateurs" and official institutions and media industries, on the one hand, and "amateurs" and professional art world, on the other hand.

To get the discussion started, let's simply summarize these two Web 2.0 themes. Firstly, in 2000s, we see a gradual shift from the majority of web users accessing content produced by a much smaller number of professional producers to users increasingly accessing content produced by other non-professional users.[191] Secondly, if 1990s Web was mostly a publishing medium, in 2000s it increasingly became a communication medium. (Communication between users, including conversations around user-generated content, take place through a variety of forms besides email:

posts, comments, reviews, ratings, gestures and tokens, votes, links, badges, photo, and video.[192])

What do these trends mean for culture in general and for professional art in particular? First of all, they do not mean that every user has become a producer. According to 2007 statistics, only between 0.5% – 1.5% users of most popular (in the U.S.) social media sites - Flickr, YouTube, and Wikipedia - contributed their own content. Others remained consumers of the content produced by this 0.5 - 1.5%. Does this mean that professionally produced content continues to dominate in terms of where people get their news and media? If by "content" we mean typical twentieth century mass media - news, TV shows, narrative films and videos, computer games, literature, and music – then the answer is often yes. For instance, in 2007 only 2 blogs made it into the list of 100 most read news sources. At the same time, we see emergence of the "long-tail" phenomenon on the net: not only "top 40" but most of the content available online - including content produced by individuals - finds some audiences.[193] These audiences can be tiny but they are not 0. This is best illustrated by the following statistics: in the middle of 2000s every track out of a million of so available through iTunes sold at least once a quarter. In other words, every track no matter how obscure found at least one listener. This translates into new economics of media: as researchers who have studied the long tail phenomena demonstrated, in many industries the total volume of sales generated by such low popularity items exceeds the volume generated by "top forty" items.[194]

Let us now consider another set of statistics showing that people increasingly get their information and media from social media sites. In January 2008, Wikipedia has ranked as number 9 most visited web site; Myspace was at number 6, Facebook was at 5, and MySpace was at 3. (According to the company that collects these statistics, it is more than likely that these numbers are U.S. biased, and that the rankings in other countries are different.[195] However,

the general trend towards increasing use of social media sites – global, localized, or local - can be observed in most countries. In fact, according to 2008 report, the growth in social media has been accelerating outside of U.S., with a number of countries in Asia significantly outpacing Western Countries in areas – reading and writing blogs, watching and making video and photos, etc. For instance, while only %26.4 of Internet users in the U.S. started a blog at some point, this number was %60.3 for Mexico, %70.3 for China, and %71.7 for South Korea. Similarly, while in the U.S. the percentage of Internet users who also use social networks was %43, it was %66 for India, %71.1 for Russia, %75.7 for Brazil, and %83.1 for Philippines.[196])

The numbers of people participating in these social networks, sharing media, and creating "user generated content" are astonishing – at least from the perspective of early 2008. (It is likely that in 2012 or 2018 they will look trivial in comparison to what will be happening then). MySpace: 300,000,000 users.[197] Cyworld, a Korean site similar to MySpace: 90 percent of South Koreans in their 20s, or 25 percent of the total population of South Korea.[198] Hi4, a leading social media site Central America: 100,000,000 users.[199] Facebook: 14,00,000 photo uploads daily.[200] The number of new videos uploaded to YouTube every 24 hours (as of July 2006): 65,000.[201] The number of videos watched by 79 million visitors to YouTube during January 2008: more than 3 billion.[202]

If these numbers are already amazing, consider another platform for accessing, sharing, and publishing media: a mobile phone. In Early 2007, 2.2 billion people have mobile phones; by the end of the year this number was expected to be 3 billion. Obviously, today people in an Indian village who all sharing one mobile phone do not make video blogs for global consumption – but this is today. Think of the following trend: in the middle of 2007, Flickr

contained approximately 600 million images. By early 2008, this number has already doubled.

These statistics are impressive. The more difficult question is: how to interpret them? First of all, they don't tell us about the actual media diet of users (obviously these diets vary between places and demographics). For instance, we don't have exact numbers (at least, they are not freely available) regarding what exactly people watch on sites such as YouTube – the percentage of user-generated content versus commercial content such as music videos, anime, game trailers, movie clips, etc.[203] Secondly, we also don't have exact numbers regarding which percentage of peoples' daily media/information intake comes from big news organization, TV, commercially realized films and music versus non-professional sources.

These numbers are difficult to establish because today commercial media does not only arrive via traditional channels such as newspapers, TV stations and movie theatres but also via the same channels which carry user-generated content: blogs, RSS feeds, Facebook's posted items and notes, YouTube videos, etc. Therefore, simply counting how many people follow a particular communication channel is no longer tells you what they are watching.

But even if we knew precise statistics, it still would not be clear what are the relative roles between commercial sources and user-produced content in forming people understanding of the world, themselves, and others. Or, more precisely: what are the relative weights between the ideas expressed in large circulation media and alternative ideas available elsewhere? And, if one person gets all her news via blogs, does this automatically mean that her understanding of the world and important issues is different from a person who only reads mainstream newspapers?

The Practice of Everyday Media Life: Tactics as Strategies

For different reasons, media, businesses, consumer electronics and web industries, and academics converge in celebrating content created and exchanged by users. In U.S. academic discussions, in particular, the disproportional attention was given to certain genres such as "youth media," "activist media," "political mash-ups" – which are indeed important but do not represent more typical usage of hundreds of millions of people.

In celebrating user-generated content and implicitly equating "user-generated" with "alternative" and "progressive," academic discussions often stay away from asking certain basic critical questions. For instance: To what extent the phenomenon of user-generated content is driven by consumer electronics industry – the producers of digital cameras, video cameras, music players, laptops, and so on? Or: To what extent the phenomenon of user-generated content is generated by social media companies themselves – who, after all, are in the business of getting as much traffic to their sites as possible so they can make money by selling advertising and their usage data?

Here is another question. Given that the significant percentage of user-generated content either follows the templates and conventions set up by professional entertainment industry, or directly re-uses professionally produced content (for instance, anime music videos), does this means that people's identities and imagination are now even more firmly colonized by commercial media than in the twentieth century? In other words: Is the replacement of *mass consumption of commercial culture* in the 20th century by *mass production of cultural objects by users* in the early 21st century is a progressive development? Or does it constitutes a further stage in the development of "culture industry" as analyzed by Theodor Adorno and Max Horkheimer in their 1944 book *The Culture Industry: Enlightenment as Mass Deception*? Indeed, if the twentieth century subjects were simply consuming the products of culture

industry, 21st century prosumers and "pro-ams" are passionately imitating it. That is, they now make their own cultural products that follow the templates established by the professionals and/or rely on professional content.

The case in point is anime music videos (often abbreviated as AMV). My search for "anime music videos" on YouTube on April 7, 2008 returned 275,000 videos.[204] Animemusicvideos.org, the main web portal for anime music video makers (before the action moved to YouTube) contained 130,510 AMVs as of February 9, 2008. AMV are made mostly by fans of anime in the West. They edit together clips from one or more anime series to music, which comes from different sources such as professional music videos. Sometimes, AMV also use cut-scene footage from video games. From approximately 2002-2003, AMV makers also started to increasingly add visual effects available in software such as After Effects. But regardless of the particular sources used and their combination, in the majority of AMV all video and music comes from commercial media products. AMVs makers see themselves as editors who re-edit the original material, rather than as filmmakers or animators who create from scratch.[205]

To help us analyze AMV culture, let us put to work the categories set up by Michel de Certeau in his 1980 book *The Practice of Everyday Life*.[206] De Certeau makes a distinction between "strategies" used by institutions and power structures and "tactics" used by modern subjects in their everyday life. The tactics are the ways in which individuals negotiate strategies that were set for them. For instance, to take one example discussed by de Certeau, city's layout, signage, driving and parking rules and official maps are strategies created by the government and companies. The ways an individual is moving through the city, taking shortcuts, wondering aimlessly, navigating through favorite routes and adopting others constitute tactics. In other words, an individual can't physically reorganize the city but she can adopt itself to her needs by

choosing how she moves through it. A tactic "expects to have to work on things in order to make them its own, or to make them 'habitable'."[207]

As De Certeau points out, in modern societies most of the objects which people use in their everyday life are mass produced goods; these goods are the expressions of strategies of producers, designers, and marketers. People build their worlds and identities out of these readily available objects by using different tactics: bricolage, assembly, customization, and – to use the term which was not a part of De Certeau's vocabulary but which has become important today – remix. For instance, people rarely wear every piece from one designer's collection as they appear in fashion shows: they usually mix and match different pieces from different sources. They also wear clothing pieces in different ways than it was intended, and they customize the cloves themselves through buttons, belts, and other accessories. The same goes for the ways in which people decorate their living spaces, prepare meals, and in general construct their lifestyles.

While the general ideas of *The Practice of Everyday Life* still provide an excellent intellectual paradigm for thinking about the vernacular culture, since the book was published in 1980s many things also changed. These changes are less drastic in the area of governance, although even there we see moves towards more transparency and visibility. (For instance, most government agencies operate detailed web sites.) But in the area of consumer economy, the changes have been quite substantial. Strategies and tactics are now often closely linked in an interactive relationship, and often their features are reversed. This is particularly true for "born digital" industries and media such as software, computer games, web sites, and social networks. Their products are *explicitly designed to be customized by the users.* Think, for instance, of the original Graphical User Interface (popularized by Apple's Macintosh in 1984) designed to allow a user to customize the appearance and functions of the

computer and the applications to her liking. The same applies to recent web interfaces – for instance, iGoogle which allows the user to set up a custom home page selecting from many applications and information sources. Facebook, Flickr, Google and other social media companies encourage others to write applications, which mash-up their data and add new services (as of early 2008, Facebook hosted over 15,000 applications written by outside developers.) The explicit design for customization is not limited to the web: for instance, many computer games ship with level editor that allows the users to create their own levels. And *Spore* (2008) designed by celebrated Will Write went much further: most of the content of the game is created by users themselves: "The content that the player can create is uploaded automatically to a central database (or a peer-to-peer system), cataloged and rated for quality (based on how many users have downloaded the object or creature in question), and then re-distributed to populate other players' games."[208]

Although the industries dealing with the physical world are moving much slower, they are on the same trajectory. In 2003 Tayota introduced Scion cars. Scion marketing was centered on the idea of extensive customization. Nike, Adidas, and Puma all experimented with allowing the consumers to design and order their own shoes by choosing from a broad range of shoe parts. (In the case of Puma Mongolian Barbeque concept, a few thousand unique shoes can be constructed.)[209] In early 2008 Bug Labs introduced what they called "the Lego of gadgets": open sourced consumer electronics platform consisting from a minicomputer and modules such as a digital camera or a LCD screen.[210] The celebration of DIY practice in various consumer industries from 2005 onward is another example of this growing trend. Other examples include the idea of co-creation of products and services between companies and consumers (*The Future Of Competition: Co-Creating Unique Value with Customers* by C.K. Prahalad and Venkat Ramaswamy[211]), as well as the concept of crowdsourcing in general.

In short: since the original publication of *The Practice of Everyday Life*, companies have developed new kinds of strategies. These strategies mimic people's tactics of bricolage, re-assembly and remix. In other words: the logic of tactics has now become the logic of strategies.

According to De Certeau original analysis from 1980, tactics do not necessary result in objects or anything stable or permanent: "Unlike the strategy, it <tactic> lacks the centralized structure and permanence that would enable it to set itself up as a competitor to some other entity… it renders its own activities an "unmappable" form of subversion."[212] Since the early 1980s, however, consumer and culture industries have started to systematically turn every subculture (particularly every youth subculture) into products. In short, the cultural tactics evolved by people were turned into strategies now sold to them. If you want to "oppose the mainstream," you now had plenty of lifestyles available – with every subculture aspect, from music and visual styles to clothes and slang – available for purchase.

This adaptations, however, still focused on distinct subcultures: bohemians, hip hop and rap, Lolita fashion, rock, punk, skin head, Goth, etc.[213] However, in 2000s, the transformation of people's tactics into business strategies went into a new direction. The developments of the previous decade – the Web platform, the dramatically decreased costs of the consumer electronics devices for media capture and playback, increased global travel, and the growing consumer economies of many countries which after 1990 joined the global economy – led to the explosion of user-generated content available in digital form: Web sites, blogs, forum discussions, short messages, digital photo, video, music, maps, etc. Responding to this explosion, Web 2.0 companies created powerful platforms designed to host this content. MySpace, Facebook, Orkut, Livejournal, Blogger, Flickr, YouTube, h5 (Central

America), Cyworld (Korea), Wretch (Taivan), Orkut (Brasil), Baidu (China), and thousands of other social media sites make this content instantly available worldwide (except, of course, in a small number of countries which block or filter these sites). Thus, not just particular features of particular subcultures but the details of everyday life of hundreds of millions of people who make and upload their media or write blogs became public.

What before was ephemeral, transient, umappable, and invisible become permanent, mappable, and viewable. Social media platforms give users unlimited space for storage and plenty of tools to organize, promote, and broadcast their thoughts, opinions, behavior, and media to others. As I am writing this, you can already directly stream video from your laptop or mobile phone's camera, and it is only a matter of time before constant broadcasting of one's live becomes as common as email. If you follow the evolution from MyLifeBits project (2001-) to Slife software (2007-) and Yahoo! Live personal broadcasting service (2008-), the trajectory towards continuous capture and broadcasting of one's everyday life is clear.

According to De Certeau's 1980 analysis, strategy "is engaged in the work of systematizing, of imposing order… its ways are set. It cannot be expected to be capable of breaking up and regrouping easily, something which a tactical model does naturally." The strategies used by social media companies today, however, are the exact opposite: they are focused on flexibility and constant chance. Of course, all businesses in the age of globalization had to become adaptable, mobile, flexible, and ready to break up and regroup – but the companies involved in producing and handling physical objects rarely achieve the flexibility of web companies and software developers.[214] According to the Tim O'Reilly (in case you don't remember – he originated the term Web 2.0 in 2004), an important feature of Web 2.0 applications is "design for 'hackability' and remixability."[215] Indeed, Web 2.0 era has truly got

under way when major web companies - Amazon, eBay, Flickr, Google, Microsoft, Yahoo and YouTube - make available some of their services (APIs) and data to encourage others to create new applications using this data.[216]

In summary, today strategies used by social media companies often look more like tactics in the original formulation by De Certeau – while tactics look strategies. Since the companies which create social media sites make money from having as many users as possible visiting their sites as often as possible – because they sell ads, sell data about site usage to other companies, selling ad-on services, etc. – they have a direct interest in having users pouring their lives into these platforms. Consequently, they give users unlimited storage space to store all their media, the ability to customize their "online lives" (for instance, by controlling what is seen by who) and expand the functionality of the platforms themselves.

All this, however, does not mean strategies and tactics have completely exchanged places. If we look at the actual media content produced by users, here strategies/tactics relationship is different. As I already mentioned, for a few decades now companies have been systematically turning the elements of various subcultures developed by people into commercial products. But these subcultures themselves, however, rarely develop completely from scratch – rather, they are the result of cultural appropriation and/or remix of earlier commercial culture by consumers and fans.[217] AMV subculture is a case in point. On the other hand, it exemplifies new "strategies as tactics" phenomenon: AMVs are hosted on mainstream social media sites such as YouTube, so they can't be described as "transient" or "unmappable" - you can use search to find them, see how others users rated them, save them as favorites, etc. On the other hand, on the level of content, it is "practice of everyday life" as before: the great majority of AMVs consist from segments sampled from commercial anime programs and

commercial music. This does not mean that best AMVs are not creative or original – only that their creativity is different from the romantic/modernist model of "making it new." To borrow De Certeau's terms, we can describe it as *tactical creativity* that "expects to have to work on things in order to make them its own, or to make them 'habitable.'"

Media Conversations

"Creativity" is not the only term impacted by the phenomena of social media. Other very basic terms – content, a cultural object, cultural production, cultural consumption, communication – are similarly being expanded or redefined. In this section we will look at some of the most interesting developments in social media which are responsible for these redefinitions.

One of the characteristics of social media is that it is often hard to say where "content" ends and the discussions of this content begin. Blog writing offers plenty of examples. Frequently, blog posts are comments by a blog writer about an item that s/he copied from another source. Or, consider comments by others that may appear below a blog post. The original post may generate a long discussion which goes into new and original directions, with the original post itself long forgotten. (Discussions on Forums often follow the same patterns.)

Often "content," "news" or "media" become *tokens* used to initiate or maintain a conversation. Their original meaning is less important than their function as such tokens. I am thinking here of people posting pictures on each other pages on MySpace, or exchanging gifts on Facebook. What kind of gift you get is less important than the act of getting a gift, or posting a comment or a picture. Although it may appear at first that such conversation simply foreground Roman Jakobson's emotive and/or phatic communication functions which he described already in 1960[218], it is also possible that a detailed analysis

will show them to being a genuinely new phenomenon.

The beginnings of such analysis can be found in the writing of social media designer Adrian Chan. As he points out, "All cultures practice the exchange of tokens that bear and carry meanings, communicate interest and count as personal and social transactions." Token gestures "cue, signal, indicate users' interests in one another." While the use of tokens in not unique to networked social media, some of the features pointed by Chan do appear to be new. For instance, as Chan notes, the use of tokens in net communication is often "accompanied by ambiguity of intent and motive (the token's meaning may be codified while the user's motive for using it may not). This can double up the meaning of interaction and communication, allowing the recipients of tokens to respond to the token or to the user behind its use."[219]

Consider another very interesting new communication situation: *a conversation around a piece of media* – for instance, comments added by users below somebody's Flickr photo or YouTube video which do not only respond to the media object but also to each other. According to a survey conducted in 2007, %13 of Internet users who watch video also post comments about the videos.[220] (The same is often true of comments, reviews and discussions on the web in general – the object in question can be software, a film, a previous post, etc.) Of course, such conversation structures are also common in real life. However, web infrastructure and software allow such conversations to become distributed in space and time – people can respond to each other regardless of their location and the conversation can in theory go forever. (The web is millions of such conversations taking place at the same time – as dramatized by the installation *Listening Post* created by Ben Rubin and Mark Hansen[221]). These conversations are quite common: according to the report by Pew internet & American Life Project (12/19/2007), among U.S.

teens who post photos online, %89 reported that people comment on these photos at least some of the time.[222]

Equally interesting *is conversations which takes place through images or video* – for instance, responding to a video with a new video. This phenomenon of "conversation through media" was first pointed to me by UCSD graduate student Derek Lomas in 2006 in relation to comments on MySpace pages that often consists of only images without any accompanying text. Soon thereafter, YouTube UI "legitimized" this new type of communication by including "post a video response" button and along with other tools that appear below a rectangle where videos are played. It also provides a special places for videos created as responses. (Note again that all examples of interfaces, features, and common uses of social media sites here refer to middle of 2008; obviously some of the details may change by the time you read this.) Social media sites contain numerous examples of such "conversations through media" and most of them are not necessary very interesting – but enough are. One of them is a conversation around a five-minute "video essay" *Web 2.0 ... The Machine is Us/ing Us* posted by a cultural anthropologist Michael Wesch on January 31, 2007.[223] A year later this video was watched 4,638,265 times.[224] It has also generated 28 video responses that range from short 30-second comments to equally theoretical and carefully crafted longer videos.

Just as it is the case with any other feature of contemporary digital culture, it is always possible to find some precedents for any of these communication situations. For instance, modern art can be understood as conversations between different artists or artistic schools. That is, one artist/movement is responding to the works produced earlier by another artist/movement. For instance, modernists react against classical nineteenth century salon art culture; Jasper John and other pop-artists react to abstract

expressionism; Godard reacts to Hollywood-style narrative cinema; and so on. To use the terms of YouTube, we can say that Godard posts his video response to one huge clip called "classical narrative cinema." But the Hollywood studios do not respond – at least not for another 30 years.

As can be seen from these examples, typically these conversations between artists and artistic schools were not full conversations. One artist/school produced something, another artist/school later responded with their own productions, and this was all. The first art/school usually did not respond. But beginning in the 1980s, professional media cultures begin to respond to each other more quickly and the conversations are no longer go one way. Music videos affect the editing strategies of feature films and television; similarly, today the aesthetics of motion graphics is slipping into narrative features. Cinematography, which before only existed in films, is taken up in video games, and so on. But these conversations are still different from the *communication between individuals through media* in a networked environment. In the case of Web 2.0, it is individuals directly talking to each other using media rather than only professional producers.

New Media Technologies and the Arts: a History of Diminishing Options

It has become a cliché to discuss new communication and media technologies in terms of "new possibilities they offer for artists." Since I started writing about new media art in the early 1990s, I have seen this stated countless times in relation to each new technology which came along – virtual reality and virtual worlds, Internet, Web, networks in general ("network art"), computer games, locative media, mobile media, and social media.

But what if instead of automatically accepting this idea of "expanding possibilities," we imagine its opposite? What if new media technologies impact

professional arts in a very different way? Let us explore the thesis that, instead of offering arts new options, each new modern media technology has put further limits on the kinds of activities and strategies for making media that artists can claim as unique.

As an example, consider a well-known and extensively discussed episode in the history of arts and technology: the effect of photography on painting in the 19th century. According to a common interpretation, the new medium of photography liberated painting from its documentary function. By taking over the job of recording visible reality, photography set painters free to discover new functions for their artworks. As a result, painters gradually moved away from representation towards abstraction. A two-dimensional canvas came to be understood as an object in itself rather than as a window into an illusionary space. From there, modern artists took the next step of moving from a flat painting to a three-dimensional object (constructivism, pop art). Artists also came up with a variety of new techniques for making both representational and non-representational images that opposed the automatic generation of an image in photography and film - for example, expressionism of 1910s and 1920s and post-war abstract expressionism. They also stared to use mass produced objects and their own bodies as both subjects and materials of art (pop art, performance, and other new forms which emerged in the 1960s).

But it is also possible to reinterpret these developments in visual arts in a different way. By taking over the documentary function of painting, photography has taken away painters' core business - portraits, family scenes, landscapes, and historical events. As a result, paintings suddenly lost the key roles they played both in religious and in secularized societies until that time – encoding social and personal memories, constructing visual symbols, communicating foundational narratives and world views – all in all, carrying over society's semiotic DNAs. So what could painters do after this? In fact,

they never recovered. They turned towards examining the visual language of painting (abstraction), the material elements of their craft and the conventions of painting's existence ("white on white" paintings, stretched canvases exhibited with their back facing the viewer, and so on), and the conditions of art institutions in general (from Duchamp to Conceptual Art to Institutional Critique.) And if at first these explorations were generating fresh and socially useful results - for instance, geometric abstraction was adopted as the new language of visual communication, including graphic design, packaging, interior design, and publicity - eventually they degenerated, turning into painful and self-absorbed exercises. In other words, by the 1980s professional art more often than not was chasing its own tale.

Thus, rather than thinking of modern art as a liberation (from representation and documentation), we can see it as a kind of psychosis – an intense, often torturous examination of the contents of its psyche, the memories of its glamorous past lives, and the very possibilities of speaking. At first this psychosis produced brilliant insights and inspired visions but eventually, as the mental illness progressed, it degenerated into endless repetitions.

This is only to be expected, given that art has given up its previously firm connection to outside reality. Or, rather, it was photography that forced art into this position. Having severed its connection to visible reality, art became like a mental patient whose mental processing is no longer held in check by sensory inputs. What eventually saved art from this psychosis was globalization of the 1990s. Suddenly, the artists in newly "globalized" countries – China, India, Pakistan, Vietnam, Malaysia, Kazakhstan, Turkey, Poland, Macedonia, Albania, etc. – had access to global cultural markets – or rather, the global market had now access to them. Because of the newness of modern art and the still conservative social norms in many of these countries, the social functions of art that by that time lost their

effectiveness in the West – representation of sexual taboos, critique of social and political powers, the ironic depiction of new middle classes and new rich – still had relevance and urgency in these contexts. Deprived from quality representational art, Western collectors and publics rushed to admire the critical realism produced outside of the West – and thus realism returned to become if not the center, than at least one of the key focuses of contemporary global art.

Looking at the history of art between middle of the nineteenth century and the end of Cold War (1990), it is apparent that painting did quite well for itself. If you want the proof, simply take a look at the auction prices for 20th century paintings that in 2000s became higher than the prices for the classical art. But not everybody was able to recover as well as painters from the impact of new media technologies. Probably the main reason for their success was the relatively slow development of photographic technology in the nineteenth and first third of the twentieth century. From the moment painters perceived the threat – let us say in 1839 when Daguerre developed his daguerreotype process – it took about a hundred years before color photography got to the point there it could compete with painting in terms of visual fidelity. (The relevant date here is 1935 when Kodak introduced first mass-marketed still color film Kodachrome). So painters had a luxury of time to work out new subjects and new strategies. In the last third of the twentieth century, however, the new technologies have been arriving at an increasing pace, taking over more and more previously unique artistic strategies within a matter of a few years.

For instance, in the middle of the 1980s more sophisticated video keyers and early electronic and digital effects boxes designed to work with professional broadcast video – Quantel Paintbox, Framestore, Harry, Mirage and others – made possibly to begin combining at least a few layers of video and graphics together, resulting in a kind of

use video collage.[225] As a result, the distinctive visual strategies which previously clearly marked experimental film – superimposition of layers of imagery, juxtaposition of unrelated objects of filmed reality and abstract elements – quickly became the standard strategies of broadcast video post-production. In the 1990s the wide adoption of a Video Toaster, an Apple Macintosh and a PC, which could do such effects at a fraction of a cost, democratized the use of such visual strategies. By the middle of the 1990s most techniques of modernist avant-garde become available as standard features of software such as Adobe Premiere (1991), After Effects (1993), Flash (1996), and Final Cut (1999).

As a result, the definition of experimental film, animation and video radically shifted. If before their trademark was an unusual and often "difficult" visual form, they could no longer claim any formal uniqueness. Now experimental video and films could only brand themselves through content – deviant sexuality, political views which would be radical or dangerous in the local context, representations of all kinds of acts which a viewer would not see on TV (of course, this function was also soon to be taken over by YouTube), social documentary, or the use of performance strategies focused on the body of an artist. Accordingly, we see a shift from experimentation with forms to the emphasis on "radical" content," while the term "experimental" gradually replaced by the term "independent." The latter term accurately marks the change from a definition based on formal difference to a definition based on economics: an independent (or "art") project is different from a "commercial" project mainly because it is not commissioned and paid by a commercial client (i.e., a company). Of course, in reality things are not so neatly defined: many independent films and other cultural projects are either explicitly commissioned by some organization or made for a particular market. In the case of filmmaking, the difference is even smaller: any film

can be considered independent as long as its producer is *not* an older large Hollywood studio.

In summary: from the early days of modern media technologies in the middle of the nineteenth century until now, modern artists were able to adopt to competition from these media creatively, inventing new roles for themselves and redefining what art was. (This, in fact, is similar to how today globalization and outsourcing pushes companies and professionals in different fields to redefine themselves: for instance, graphic designers in the West are turning into design consultants and managers). However, the emergence of *social media* - free web technologies and platforms which enable normal people to share their media and easily access media produced by others – combined with the rapidly fallen cost for professional-quality media devices such as HD video cameras – brings fundamentally new challenges.[226]

Is Art After Web 2.0 still possible?

How does art world responds to these challenges? Have professional artists benefited from the explosion of media content online being produced by regular users and the easily availability of media publishing platforms? Is the fact that we now have such platforms where anybody can publish their videos mean that artists have a new distribution channel for their works? Or is the world of social media – hundreds of millions of people daily uploading and downloading video, audio, and photographs; media objects produced by unknown authors getting millions of downloads; media objects easily and rapidly moving between users, devices, contexts, and networks – makes professional art simply irrelevant? In short, while modern artists have so far successfully met the challenges of each generation of media technologies, can professional art survive extreme democratization of media production and access?

On one level, this question is meaningless. Surely, never in the history of modern art it has been doing so well commercially. No longer a pursuit for a few, in 2000s *contemporary art became another form of mass culture*. Its popularity is often equal to that of other mass media. Most importantly, contemporary art has become a legitimate investment category, and with the all the money invested into it, today it appears unlikely that this market will ever completely collapse.

In a certain sense, since the beginnings of globalization in the early 1990s, the number of participants in the institution called "contemporary art" has experienced a growth that parallels the rise of social media in 2000s. Since 1990s, many new countries entered the global economy and adopted western values in their cultural politics. Which includes supporting, collecting, and promoting "contemporary art." When I first visited Shanghai in 2004, it already had has not just one but three museums of contemporary art plus more large-size spaces that show cotemporary art than New York or London. Starchitects rank Gehry, Jean Nouvel, Tadao Ando (above) and Zaha Hadid are now building museums and cultural centers on Saadiyat Island in Abu Dhabi.[227] Rem Koolhaus is building new museum of contemporary art in Riga, a capital of tiny Latvia (2007 population: 2.2 million). I can continue this list but you get the idea.

In the case of social media, the unprecedented growth of numbers of people who upload and view each other media led to lots of innovation. While the typical diary video or anime on YouTube may not be that special, enough are. In fact, in all media where the technologies of productions were democratized - music, animation, graphic design, (and also software development itself) - I have came across many projects available online which not only rival those produced by most well-known commercial companies and most well-known artists but also often explore the new areas not yet touched by those with lots of symbolic capital.

Who is creating these projects? In my observations, while some of them do come from prototypical "amateurs," "prosumers" and "pro-ams," most are done by young professionals, or professionals in training. The emergence of the Web as the new standard communication medium in the 1990s means that today in most cultural fields, every professional or a company, regardless of its size and geo location, has a web presence and posts new works online. Perhaps most importantly, young design students can now put their works before a global audience, see what others are doing, and develop together new tools and projects (for instance, see processing.org community).

Note that we are not talking about "classical" social media or "classical" user-generated content here, since, at least at present, many of such portfolios, sample projects and demo reels are being uploaded on companies' own web sites and specialized aggregation sites known to people in the field (such as archinect.com for architecture), rather than Flickr or YouTube. Here are some examples of such sites that I consult regularly: xplsv.tv (motion graphics, animation), coroflot.com (design portfolios from around the world), archinect.com (architecture students projects), infosthetics.com (information visualization projects). In my view, the significant percentage of works you find on these web sites represents the most innovative cultural production done today. Or at least, they make it clear that the world of professional art has no special license on creativity and innovation.

But perhaps the most amount of conceptual innovation is to be found today in software development for the web medium itself. I am thinking about all the new creative software tools - web mashups, Firefox plug-ins, Processing libraries, etc. – coming out from large software companies, small design firms, individual developers, and students.

Therefore, the true challenge posed to art by social media may be not all the excellent cultural works produced by students and non-professionals which are now easily available online – although I do think this is also important. The real challenge may lie in the dynamics of web culture – its constant innovation, its energy, and its unpredictability.

To summarize: Alan Kay was deeply right in thinking of a computer as generation engine which would enable invention of many new media. And yet, the speed, the breadth, and the sheer number of people now involved in constantly pushing forward *what media is* would be very hard to imagine thirty years ago when a computer metamedium was only coming into existence.