You Have To Become A Feature Of The Landscape – Ubiquity In The Aera Of Digital Imagery

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Part 1 - Thorsten Scheerer:

It is a pleasure for us to be here today, and we hope you will enjoy our lecture „You Have To Become A Feature Of The Landscape – Ubiquity In The Aera Of Digital Imagery“.

First, we will give you an overview about some anarchic visions that came up with the popularity of the Internet in the middle of the nineties, dealing with the battle between Reproduction Elites and the Reproduction Democracy. Second, we will ask the question why these visions propably have failed. Third, we will look closer at the net-economy and how art history depends on and relates to this – especially with regard to copyright issues.

Reproduction Elite

- Reproducing images:
  - expensive
  - a job for skilled and trained people
  - preserved to the owners of machines that are hard to handle
- Who are we talking about?
  - publishing houses
  - image banks
  - scientific archives (e.g. museums, art institutes)

In the past, making reproductions of images was expensive and a job for skilled and trained people. The business of reproducing, distributing, and selling images was preserved to the owners of the machines that were needed and hard to handle. These owners were publishing houses, images banks, and scientific archieves – just to name two or three of them.

Controlling Images

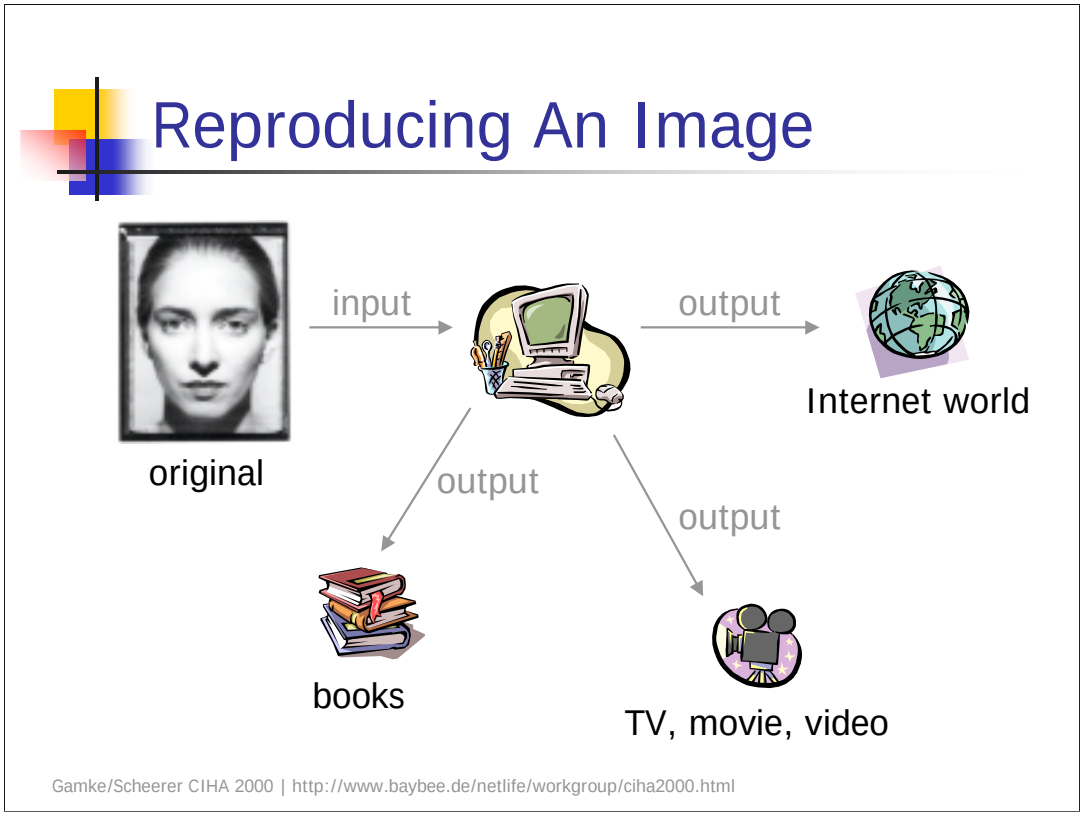
- The reproduction élite controls ...
  - the availability of images
  - the distribution ways of images
  - the price of images
  - the quality of images

So this reproduction élite still controls the availability, the distribution ways, the price, and the quality of images. So it is them who decide: Who gets images and information about them? For how long? At which rate?

Printing vs. Bits

- The aera of printing:
  - making reproductions is expensive
  - training required
  - photographical and physical processes
  - physical archives and stocks
- The aera of bits:
  - making reproductions becomes cheap
  - training required
  - digital processes
  - digital archives (databases, hard disks, CD ROMs)

With digital reproductions some important facts have changed. In the aera of printing making reproductions was expensive, training was required, and due to the photographical and physical processes physical archives were needed to store all the images. In the aera of bits some major changes emerged. Most important: Making reproductions became cheap! While there is still training required, it became much more easy to store images, because of digital reproduction means archives no longer have to be large. Reproductions now are stored on digital media like hard disks (databases) and CD ROMs.



So let me show you what it means to digitize and reproduce an image digitally with the help of a small example: If you take an image – let us say a photograph -, you digitize it with the help of your computer equipment. This means you „translate“ the image information into bits. These ones and zeros can be reproduced by the help of several media that serve as distribution means: For example books, on TV or film, and the Internet. It is the Internet World we are talking about here!

Preparing Your Image 1

- Use Photoshop®!
- make a 150 dpi scan
- do some editing
  (fancy effects, too – if you like them)
- scale image
- map to indexed colors
- export as GIF or save as JPG

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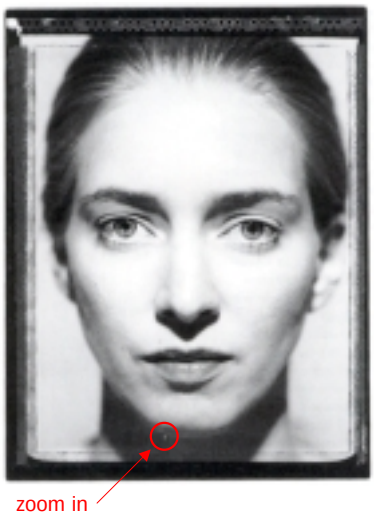
If you start a reproduction process with regard to the Internet World, you have to cling to some rules if you want to get satisfying results. Allthough I am not a sales manager of Adobe I recommend to use the programme Photoshop® to edit your picture. Scan it with 150 dots per inch. This is twice the resolution you need in the end, but it helps to get better results if you start with more than you need. The you can do some editing with Photoshop®, map your picture to indexed colors that perfectly reflect the color space of the Internet, or to be correct: the color space of your computer monitor. Finally you save the picture in GIF of JPG image format. These file formats are best for Internet based distribution. They compress the image by deleting obsolete information. This information is generally not needed to display the image correctly. If you choose to publish your digitized picture in a book, GIF or JPG will not satisfy you, but traditional media is not what I am talking about here.

Preparing Your Image 2

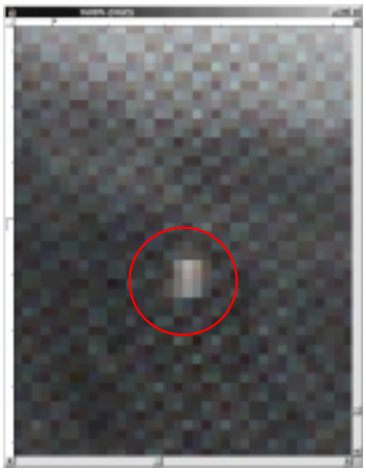
- original photograph
  12 x 9,5 cm
- software:
  Adobe Photoshop 5
  HP PrecisionScan
- size: 727 x 568
  pixel, 150 dpi,
  1,19 MB (PSD)



So you choose to digitize a photograph that has approximately the size of a postal card. Using for example HP Precision Scan and Adobe Photoshop® to scan the picture, your result will be a Photoshop® document (psd) with the size of 727 to 568, a resolution of 150 dpi and a total file size of more than one mega byte. This is small enough to fit on a floppy disk, but still much too large to fit the Internet‘s requirements.

Preparing Your Image 3

- zoom in and do some editing (e.g. to correct some flaws)
- increase contrast and brightness



With Photoshop® you can zoom in, do some editing, correct some flaws, and – for example - increase contrast and brightness.

Preparing Your Image 4

- save as GIF
  - reduce to 256 indexed colors, 8 bit per pixel

  size: 226 KB

- save as JPG

  size: 51 KB

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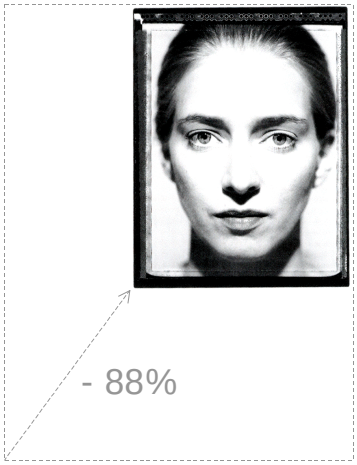
Now you can decide if saving the image in GIF file format or JPG file format is the best choice. Reducing the image's color space to 256 indexed colors and saving it as a GIF leads to a much larger image file size than simply saving it as a JPG. So this time you should choose JPG. Allthough sometimes the GIF format leads to better visual results and is easier to handle in everyday use, JPG often is the best choice, because it mostly provides smaller file sizes. The backlash is that it is more difficult to treat JPGs right.

Distributing Your Image 1

- Shrink to fit:
  - reduce to 72 dpi
    1,19 MB ▸ 280 KB
  - shrink to 192 x 150 pixel
    280 ▸ 85 KB
  - save as JPG
    85 ▸ 15 KB



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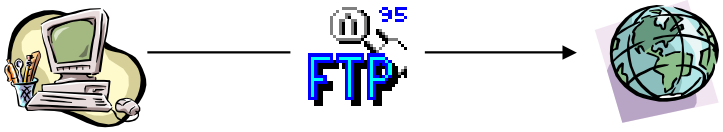
So you have chosen the JPG format. You then reduce the resolution to 72 dpi, you reduce the width and height of the image to a size that ensures that the image can be viewed comfortably on a computer monitor and finally save it in JPG file format. So the total image file size was reduced by 88%. This is 12 % of the original image size, and the image still looks great on your monitor!

Distributing Your Image 2

- 15 KB means FTP transfer in approx. 4 seconds* from your home office to a server that is accessible world wide by anyone!



* 56k modem

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Now your image is only 15 kilo bytes small and that means that you can trasfer it by the help of an FTP software in approximately four seconds from your home office to an Internet server that is accessible world wide by anyone!

Distributing Your Image 3

- Save your intellectual property easily!

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Furthermore you can protect your image by several means. On the one hand you can choose to add a digital watermark. Such watermarks are provided by the company Digimarc and using Photoshop® you can take advantage of the built in feature that allows you to order your individual watermarks online. If you need less than 100 individual watermarks per year, this services is free for you. With a digital watermark you can add some hidden information to your image. This allows you to analyse if an image that you find on the Net, and that looks like it could be yours, really belongs to you. A watermarks gives your digital images an identity.

If you want to distribute your images secretly and safely, you can encrypt them by using PGP. PGP – Pretty Good Privacy – provides really strong encryption and is available as freeware for private use.

Distributing Your Image 4

- Is this the insanely great future you are looking for?
  - free delivery
  - free postings
  - free protection (sometimes)
  - free distribution ways
  - naturally obtaining reproduction means

So is this the insanely great future you are looking for? Free delivery, free postings, free protection (at least sometimes), free distribution ways, and naturally obtaining reproduction means?

Getting Started

- What it takes:
  - computer (PC)
  - scanner
  - software (OS, Adobe Photoshop, FTP and browser software)
  - internet access
  - web space
  - training
- What it costs:
  - computer: 2400 €
  - scanner: 200 €
  - software: 3000 €
  - Internet access: 70 € per month
  - web space: 5 € to 25 € per month
  - training: depends on your intelligence

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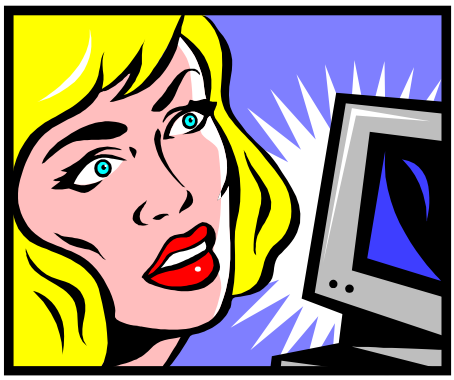
All it takes to get started is a computer, a scanner, some software, Internet access, web space, and some training that enables you to treat this equipment right. Sounds simple, but the backlash is that all or at least most of this is not for free! A good computer costs about 2400 € and a scanner costs 200 €. Your Internet access will cost you 70 € per month, assumed that everyday you are online for two hours (Internet by Call). It is hard to calculate the costs of web space, but generally 5 € per month is a good price for private use, while 25 € is for business use. It may cost more, but it depends on what you are looking for. 5 – 25 € per month is enough to get started! Last, but not least, training is required. Depending on your intelligence you can make it on your own, maybe you have to buy some additional books, and maybe you have to ask some more experienced guys that propably do not offer their knowledge to you for free. But let us assume that you are highly talented, so you can save the money other guys have to spend for books and suitable book shelves.

Getting Online

- total cost of ownership
  - ~ 320 € per month
  - Need a database?
    10.000 € (cheap)
  - Need software applications and databases that meet business demands?
    200.000 € (at least)



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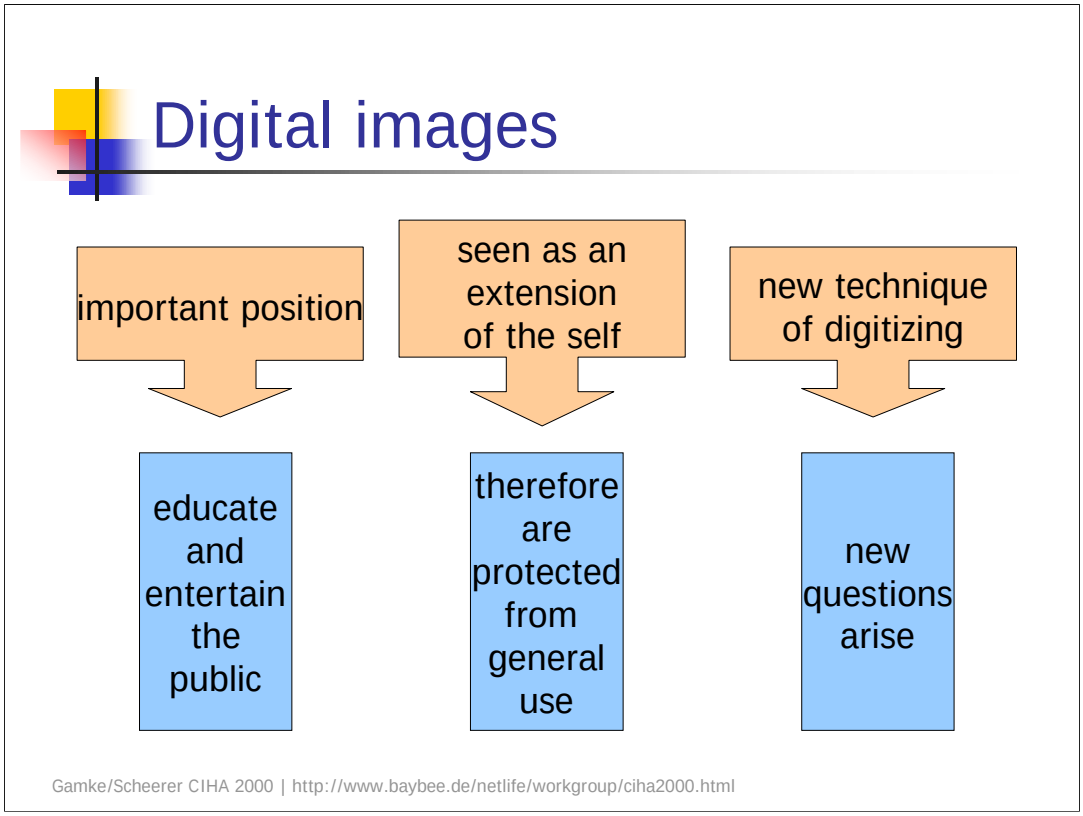
To put it in a nutshell: Your equipment that enables you to digitally reproduce images costs you about 320 € per month. If you need a small database that makes it more comfortable for you to store your images, you have to pay about 10.000 € if you ask someone to create it for you. If you are really looking to make business and therefore are in need of some really sophisticated solutions you have to invest at least 200.000 €.

So after all, the Reproduction Democracy lead to a new Reproduction Elite that now forms the net-economy. The democratic vision of the early days is in danger. Can economic circumstances and necessities be the reasons (e.g. the natural longing for revenues and profit)? What are the key aspects that build the rules of the new economy, and what are their relations to art history?



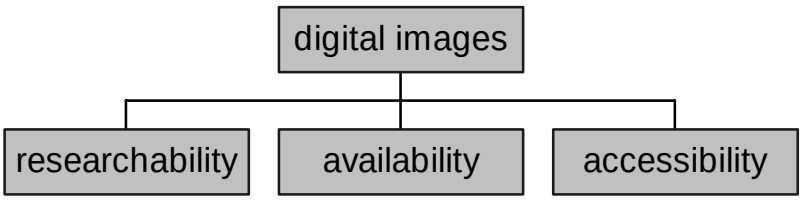
Part 2 - Petra Klara Gamke:

Who, in a world of global economy and global science, does not want to become a feature of the landscape? To offer a service, which is intellectually inevitable for people working with a special material and by the way to earn a tremendous amount of money. A service, which – beyond that - is authorized by official law? Starting with this critical statement the following thoughts intend to show some aspects concerning the discussion about the distribution of digitized image material especially via electronic media such as CD-ROM and the Internet.

Never before have images held such an influential position as in digital time. Almost everyone working with digital media needs images to educate and entertain the public, irrespective of a special group. Despite lack of clarity about handling digitized image material it is a fact, that like works of art and art photography even digitized images are seen as an extension of the „self“ and therefore are protected from general use by anyone else. Copyright depends not on the medium, but on the idea that someone creating something has exclusive rights of the thing created, partly for economic reasons, partly because of the idea of this extension of the „self“. However, with the new technique of digitizing, the possibility to convert images into computable bit-structures, a lot of new questions arise, not only for the creators but also for the owners, the vendors and the users. The task of the national and international legislators to standardize the global information infrastructure is unquestionably a great challenge.

Ubiquity - Databases

Everyone is able to use everything simultaneously.



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First of all the phenomenon of ubiquity is of special interest: All over the world everyone is able to use everything simultaneously. There is no clear order of sequence and at present no one really controls the right use or the infringement of intellectual property. Referring to digital images the advantages for all art historians – students as well as teachers, professors and scientists – seem to be obvious. Instead of walking through libraries, searching book-shelves looking for a special photography, being entirely dependent on opening hours and public access, you only have to get online, click on several webpages and within a couple of minutes the picture you have been looking for smiles on your monitor. But that is not all: Forget photocopying or borrowing the book – one more click and the picture is stored in your computer in a brilliant quality ready to be re-arranged in any possible way. All over the world hundreds of content providers offer millions of digitized images in their databases. The user cannot only look at this material and retaining it for personal interest. Sometimes there is even the possibility to buy those images in different qualities, allowing the customer to reutilize them in various ways such as thumbnails on a webpage or prints in a book. Of course the provider will make a certain charge for this service. However, in comparison with methods to get a reusable copy in former times, at first sight this procedure seems to save a lot of time and money. In fact you have to cope with one difficulty: the ubiquity of image material.

Database Associations

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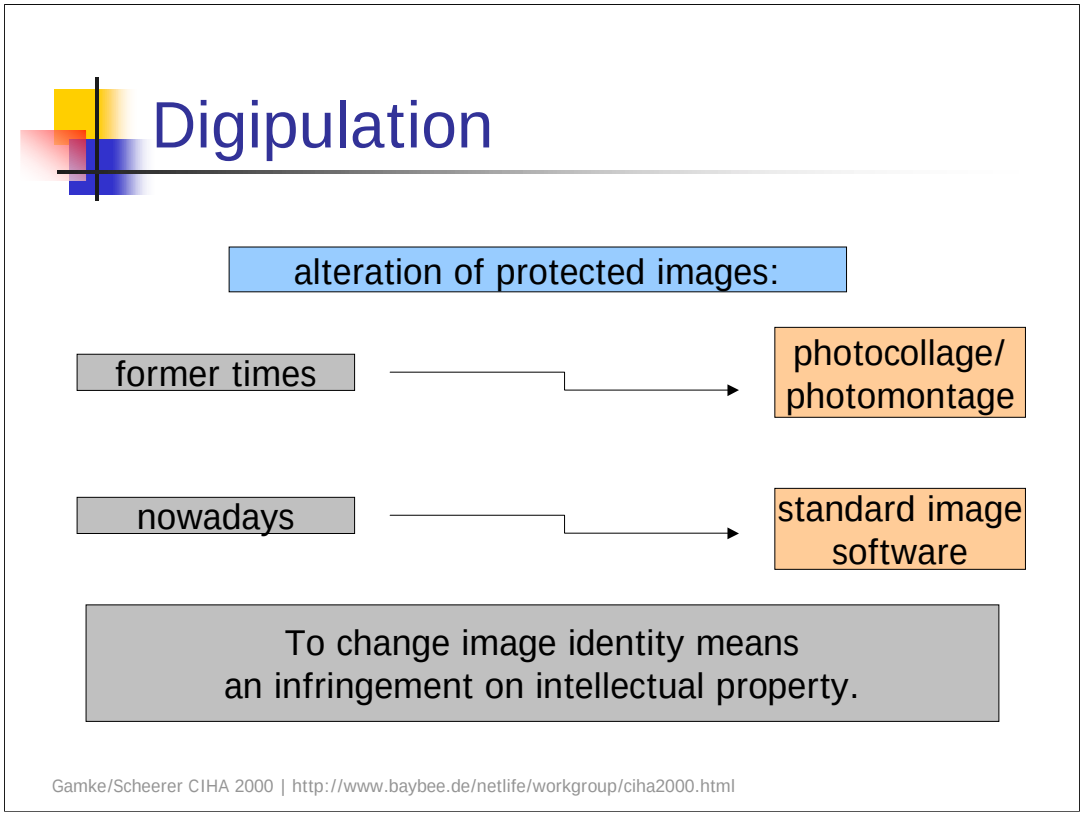
The researchability and availability of digital images stored in databases or CD-ROM's does not in all cases facilitate the accessibility itself. Far more knowledge is required of the resources and the handling of the material an art historian needs. If you look for example for paintings by the Flemish baroque painter Rubens in the world's biggest image-database Corbis, you will be surprised. The keyword „Rubens" does not only register paintings by Rubens, but also an image showing the racing driver Rubens Barrichello. Lots of other examples could be given.

That means that finding the image somebody wants sometimes takes a lot of time. It is not only the diversity of image material; one can search topial categories and subcategories. Keywords are assigned to images by subjective human judgement, so they may not reveal as what was expected. The more successful an art historian wants to be, the more specific the image database has to be.

On account of the immense investments image providers have to make to offer the customer image services – that includes the supply of images, as well as the ensuring of digital rights and the preparation for digital demands - only financially powerful companies are able to do so. To cover the enormous costs and furthermore to make profit, the content must attract a lot of people willing to pay for the service. It is not surprising that commercial purposes guarantee much more money than a minority of art historians. That is why commercial image content providers do not put stress on search structures and filtering especially for these aesthetes. The risk of losing the market and the investments outweighs the ideal of an altruistic service for the intellectual élite and therefore a service for the cultural heritage. To summarize the aspect of ubiquity, it seems as if in a world of nearly infinite choices, information about the choices may be more valuable than the choices themselves. (Chip Bayers in Wired 4.04)



Another important fact is the possibility of digipulation: While in former times the professional alteration of protected images meant extensive expenses – think of photocollage and photomontage – these experiments nowadays mean only some types using a standard image software. There are two questions in digital art time which should keep art historians occupied: How should digital images be treated to serve scientific demands, and who protects image identity? To change image identity, for instance to save details of images and represent them as new originals or to change colours or forms means a double infringement on intellectual property: to the one who created the work of art and to the one who created the photography. However, the feeling that you infringe the copyright seems to become weaker with the easiness of infringement on image identity. For images serving scientific demands marks of value are important.

Digipulation (Manipulation)

Oscott Psalter, fol. 16 v, London, British Library, Ms. Add. 50000, 300 x 190 mm

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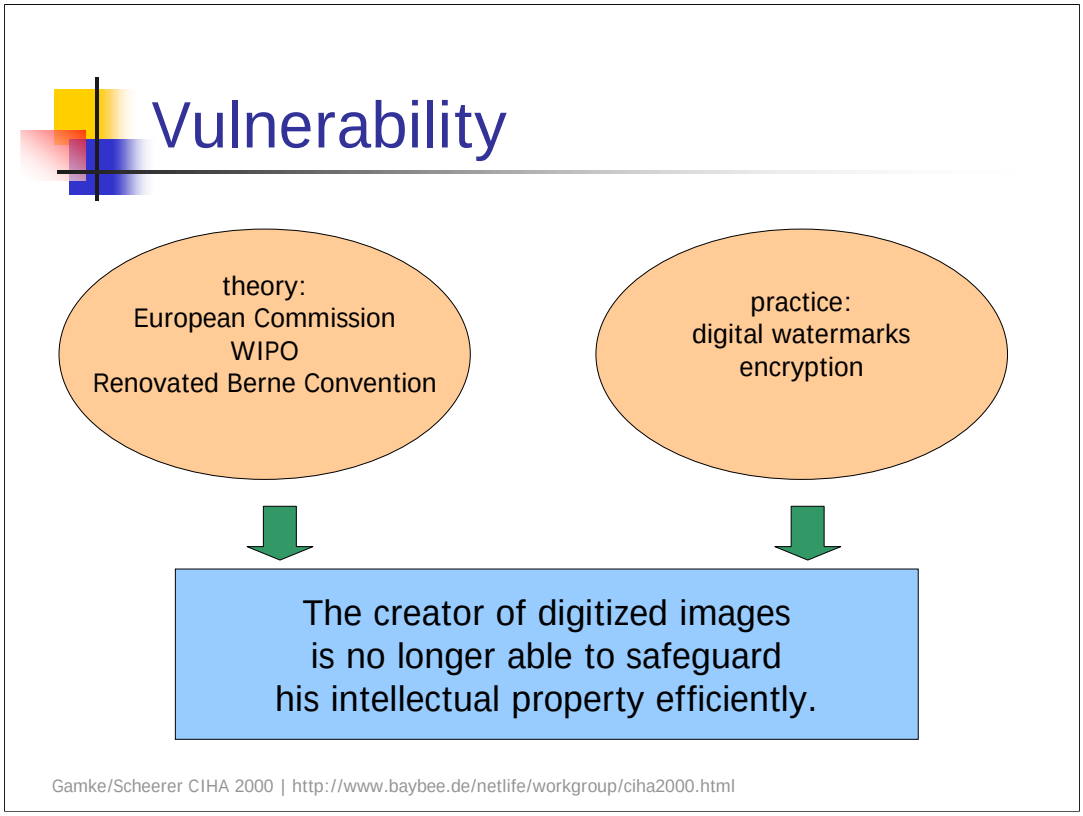
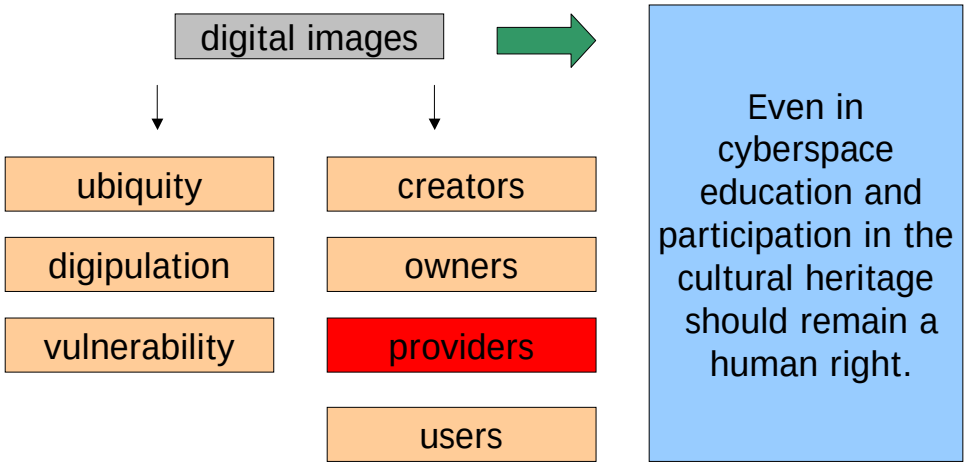
Imagine a lecture about gothic book illumination: What would happen if students instead of getting the image material from serious printed books in the form of traditional copies, downloaded the material from the Net? Suddenly the clothes worn by Christ could get a colour the artist had never intended to give the protagonist. The interpretation and analysis of book illumination would become the result of the use of a fake presented as an authentic image in the Net. Despite the fact that we - as carefully working scientists - hope never to fall for such a fake, for a student the ubiquity of image material could mean an underestimated danger. The advantage of the cyberworld, in which everything is available at any time for anyone, could change into a disadvantage: offering a trash-can full of useless information. Again the image content providers play an important part. Depending on the quality of the provider the image material offered undergoes a certain quality-control. The customer using the service of a special provider and paying for it, expects a guarantee of the authenticity and identity of the image. Once more the filter agent who gets rewarded for finding good image material is in the pole position. The redistributor's goal is to be the most convenient source of content. It is a serious apprehension that in the future the market for digitized image material will more and more bifurcate into content of premium prices and high value, and cheap prices but less value.



A third fact to be dealt with is the phenomenon of vulnerability: Once an image is digitized, control of the distribution and exploitation is given to the public. The creator of the image is no longer able to safeguard his intellectual property efficiently. Whereas the traditional publishers have adopted several ways of controlling and protecting intellectual property over the years, the digital world needs new protection systems. The European Commission and the World Intellectual Property Organization (WIPO) – the body responsible for putting international copyright treaties into effect – have started to standardize the laws to serve the demands of electronic environment. The renovated Berne Convention as the major international treaty on copyright matters is one example. The guarantee of the meaning of intellectual property even in cyberspace is one of the greatest results. To put all this into practice seems to be the real problem. To publish terms and conditions which regulate the use of digitized images is not a sufficient medium to protect the images themselves. Therefore the content providers started to integrate technical protection systems. The possibilities of protection range from digital watermarks to encryption. With certain soft- and hardware components it is theoretically feasible to reveal every infringement on protected material while transmitting the corresponding information to the creator or the owner of the digital rights. Other systems make it possible to control the access to image information by integrating a pay-per-use component.

Cyberspace: A democratic medium?



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At present different ways of offering and at the same time protecting image material coexist. Handling digitized image material means bearing in mind the challenges to be solved: challenges caused by ubiquity, digipulation and vulnerability. Creators, as well as owners, providers and users of digital images should get the chance to gain the greatest profit from the digital world. Although the law protects the creators by assuring them financial advantage for their work and the users by assuring them fair-use-rights it seems as if the content providers are getting the upper hand. There is a serious danger that the image content providers‘ power will increase. Giving exclusive rights to image providers means heaping up information material for moneyed classes.

Competition enhances excellent work – this is also true in matters of science, but not at any price. The idea of cyberspace offering information and education for anyone all over the world – so to speak being the first democratic medium - develops into the same commercial market that is regulated through supply and demand of content. Uncontrolled abandonment of digital rights means transforming the emerging image material superhighway into a publisher-dominated toll road.

Education and participation in the cultural heritage on reasonable conditions should remain a human right. Beyond all doubt the idea of democracy is the best way to unite individuals of different cultures, even in digital times.

Thank you!

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