

Panorama

Practical introduction

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- software tools
- let us create a panorama

Definition

- An unbroken view of an entire surrounding area.
- A picture or series of pictures representing a continuous scene, often exhibited a part at a time by being unrolled and passed before the spectator. [1]
- **Synonyms:** [cyclorama](#), [diorama](#) [2]
- panoramic view - image, field of view (FOV) > 100°
 - human eyes FOV $\approx 180^\circ$
 - standard camera FOV $\approx 45^\circ$ - $50^\circ \Rightarrow$ photo composition
 - problems
 - different photo perspective
 - camera settings (automatic mode – aperture, time, white balance)
 - objective imprecision, trembling by capturing

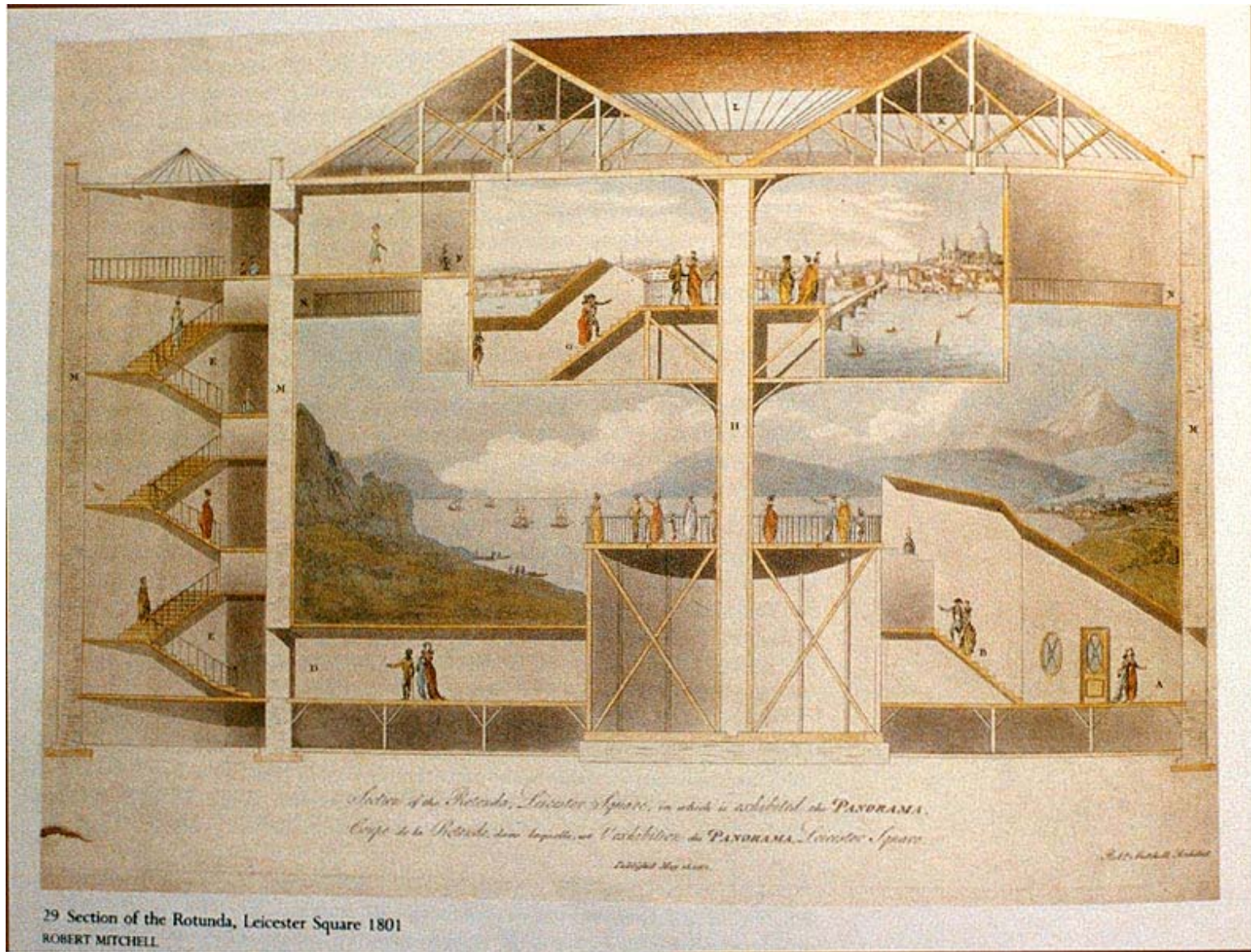
History

- “panorama”, from the Greek words: pan = all, complete, horama = view. [4]
- assumed author - Robert Barker, end of 18.th century – painter (paint of Edinburgh)
- Originally, it was the name of a form of painting; large, very long paintings hung on the inside wall of a round room. The viewer stood on a platform in the middle of the room to see representations of cities, landscapes, battles or religious scenes.
- the panorama craze of the early 1800s [6]
- The end of the eighteenth century saw the invention of the modern panorama. New form lucrative for some painters - low art. [4]
- historical circle panoramas – town presentation: Warshaw-1873, London- 1909 [5]



- photography – composition of single photographs
- The 13.th international Pnorama Conference, LuXun Academy of Fine Art, Shenyang, China, September 2005 [8]
- usage - 3D presentations of interior and exterior, of hotels, shops, objects, towns [3]





29 Section of the Rotunda, Leicester Square 1801
ROBERT MITCHELL

Section of the Rotunda, Leicester Square, 1801. Burford's Panorama, Leicester Square: cross section (acquaint from Robert Mitchell's **Plans and Views in Perspective of Buildings Erected in England and Scotland, 1801**). Stephen Oetermann, **The Panorama History of Mass Media**, N.Y. : Zone Books, 1997, p. 104 [6]

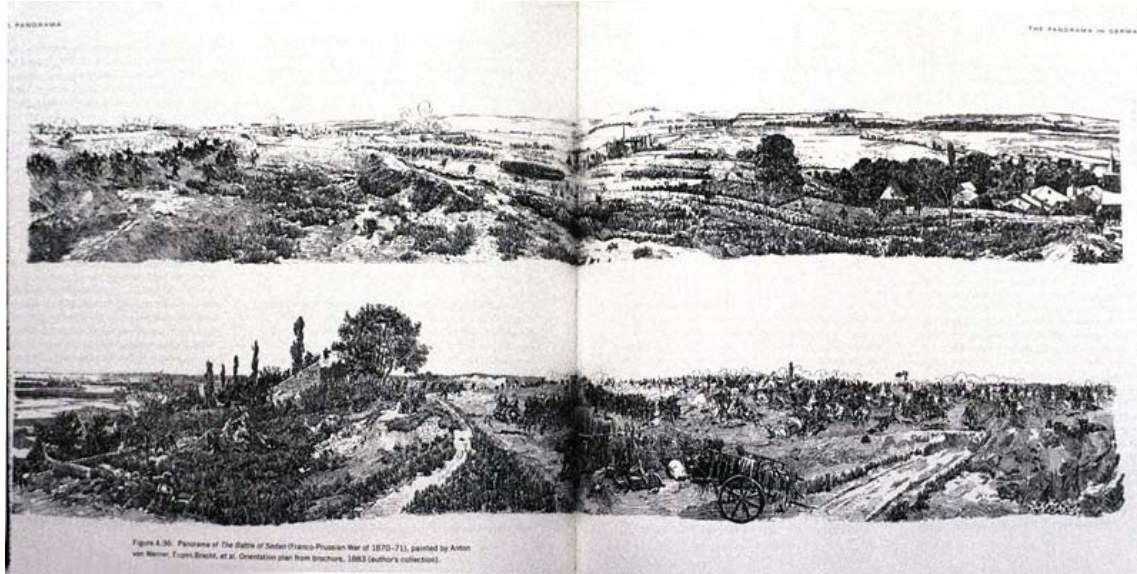
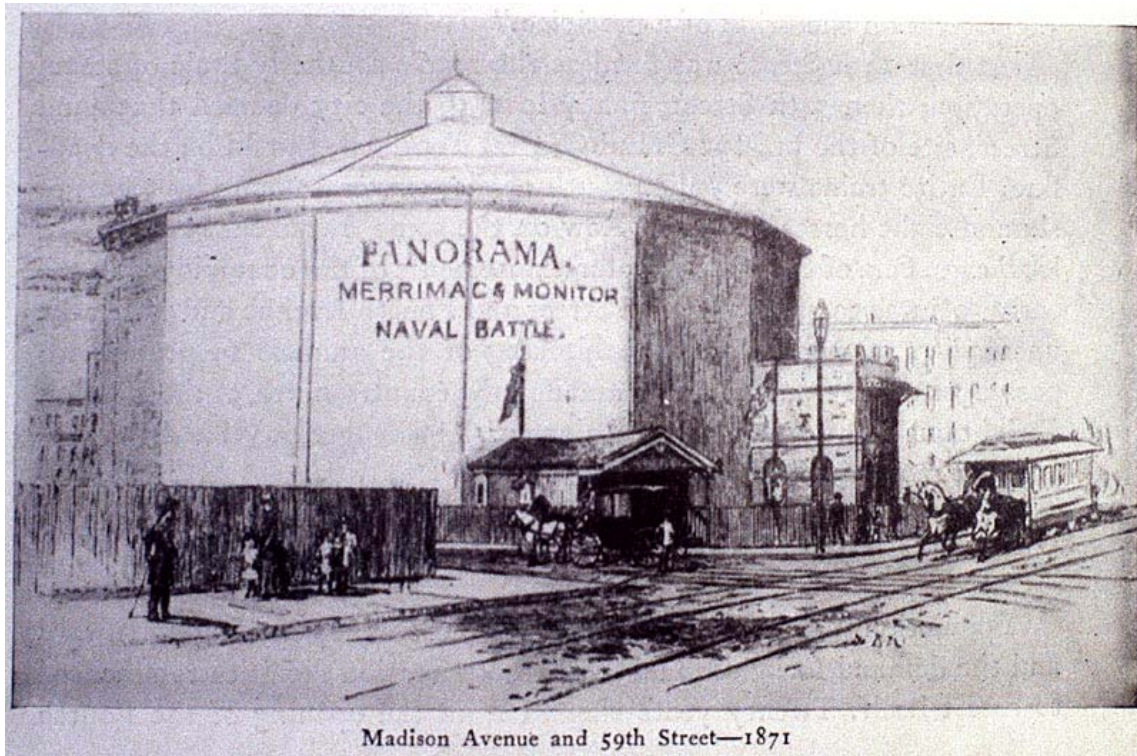


Figure 4.36. Panorama of The Battle of Sedan (Franco-Prussian War of 1870-71), painted by Anton von Werner. Top: Bracht, et al. Orientation plan from brochure, 1893 (author's collection).



Madison Avenue and 59th Street—1871

Panorama rotundas

- still exists [7]
- The Velaslavasay Panorama
1122 West 24th Street
Los Angeles, California 90007



**Panorama of the Battle of Sedan,
Franco-Prussian War of 1870-71,** Anton
von Werner.
British Library, [6]

**Panorama. Merrimac & Monitor
Naval Battle.** Guildhall Library,
Corporation of London, [6]

Taking the pictures

- choose the spot to shoot from
- (try to) hold the camera level
- turn on one spot, camera close to your body
(one point of rotation)
take a series of pictures.



- picture overlap up to 50%.
(the constant overlap is not necessary, 30-50%), camera helper-tools.
- the last picture should overlaps with
the first one, if full 360 degree image is required



Really good quality pictures

-hardware

- digital and film panoramic cameras (360 degrees or more)
- special parabolic mirrors (attached to a camera, full 360 degree view in one shot)
- tripod
 - fixed spot for the camera rotating and that it stays level.
 - taking longer exposures (sharp picture with everything in focus).
 - check stability of the head of the tripod and that it doesn't wobble when locked.
- Spirit level
- Remote shutter release
 - useful when doing long exposures quite often (knocking the tripod or camera accidents)
- Wide angle lenses
 - not as many pictures to take
 - more vertically capturing (the picture doesn't look like a narrow 'slit')
 - 8mm lens is generally the widest lens available for any camera



Really good quality pictures -settings

- depth of field
 - what to be in focus (large of depth of field)
 - settings sufficient for every frame of the sequence. (one close sharp object - large depth of field for all pictures).
 - avoid altering (alter focus = change the field of view of the lens, a mixture of lenses - software limitations)
 - maximization ↔ number of photos
 - lens smallest aperture + focus on infinity → lenses worst optical performance (one step aperture move)
 - objective settings – hyperfacal distance
- white balance (digital camera)
 - automatic-manual mode (stitching problems)
- exposure (contrast / brightness)
 - areas of strong shadow in a scene where there is also strong light, light directly at the camera in part of the scene
 - set the exposure on a mid-lightness frame and lock it
 - adjust the exposure by under or over-exposing
- additional lights, flash, exposure varying, double shooting,....

[9]

Software tools

- Panorama Composer 2.0
 - <http://www.firmtools.com/products/panorama/>
 - \$29,95
- The Panorama Factory
 - <http://www.panoramafactory.com/>
 - \$59.95
- PhotoVista Panorama
 - http://www.panoguide.com/products/iseemedia/photovista_panorama/
 - \$69.95 – \$189.95 (very easy)
- PTgui
 - <http://www.ptgui.com/>
 - 59 euro
- Zoner Photo Studio 8 – Professional
 - <http://zoner.cz/>
 - 2 499 Kč
- AutoStitch
 - <http://www.cs.ubc.ca/~mbrown/autostitch/autostitch.html>
 - the demo version without restriction, acknowledgements of use, access to the patent, source code, technical support and updates
 - **PCrev8**: number one, fully automatic
- Arcsoft Panorama Maker
 - <http://www.arcsoft.com/products/panoramamaker/>
 - \$39.99
 - **PCrev8**: ideal for beginners, automatic
- PTAssembler
 - <http://www.tawbaware.com/ptasmlr.htm>
 - \$39
 - **PCrev8**: similar to Hugin plus automatic mode possibility
- 30 day trial
- **Hugin**
 - <http://hugin.sourceforge.net/>
 - **FREE**
 - **PCrev8**: this solution allows to tune almost all parameters of target panorama stitching, suitable for sticklers

PCrev8 – software is compared by a PC REVUE article [10] and available on an attached CD

Software steps

- photos input, lens specification
- control points selection
- images deformation and composition
- stitching (zošívanie)
- color enhancement, blending
- cutting, export to output format

Hugin

- united graphical interface for several free-available applications
- informed users
- longer work – more control
- command line applications – added by path setting
 - Panorama Tools (Helmut Dersch) – engine of Hugin
 - AutoPano (Alexandre Jenny) (<http://autopano.kolor.com>)
 - it finds panoramas in the supplied pictures, creates the panorama project files for them and adds sets of control points
 - non-commercial use only. The University of British Columbia has applied for a patent on the SIFT algorithm.
 - Enblend (Andrew Mihal) (<http://enblend.sourceforge.net>)
 - images compositing (Given a set of images that overlap in some irregular way, Enblend overlays them in such a way that the seam between the images is invisible, or at least very difficult to see.)
 - stitchers: Nona, (PTStitcher)

All these are available on PC REVUE 8 - CD [10] .

[10]

Panorama Tools – a little history

- Until mid 2002, German math professor Helmut Dersch (University of Applied Sciences, Furtwangen) [11] was the sole developer of a suite of software programs called Panorama Tools.
- “A German developer of free software has been persecuted by the US company IPIX for writing software for composing pictures into large panoramas using calculation rules which he had developed independently but which iPIX had patented in the USA. In June 2001 the conflict escalated. Prof. Dersch withdrew his software from the Net in order to evade a lawsuit which iPIX was, according to his knowledge, preparing in the US”. (<http://swpat.ffii.de/pikta/xrani/ipix/index.en.html>)
- Panorama Tools download
<http://www.tawbaware.com/maxlyons/pano12ml.htm>
- **License:** Panorama Tools is distributed under the GNU GENERAL PUBLIC LICENSE.
- As of early 2005, Panorama Tools development continues as a Sourceforge project (volunteer programmers): <http://panotools.sourceforge.net/>

Hugin - use



[9]

- Images load – save project
- Camera parameters
 - Field of view, focal length of 35 mm film camera
- Corresponding points
 - static objects
 - aim for the area in the middle of the blend between the two images. No control point should be close to the edge of any image, nor close to the very top or bottom, where the images are warped most.
- Image retouching
- panorama editing
 - add sign
 - Photoshop plug-ins by Dersch [11] (Photoshop/Plug-Ins/Filters)
 - PanCntrl.8bf (disappeared)
- PTVViewer (Helmuth Dersch) <http://www.fhurtwangen.de/~dersch/PTViewerexe/PTViewerexe.zip>
- wrml = Hugin + (Photoshop+Plugins)
- Picasa (concurrent to ACDSee)
 - free software, download from google (<http://picasa.google.com/index.html>)
 - find, edit and share all the pictures on your PC, automatically locates all your pictures and sorts them into visual albums organised by date

Referencie

- [1] <http://www.thefreedictionary.com/panorama>
- [2] <http://dictionary.laborlawtalk.com/panorama>
- [3] http://www.panogroup.szm.sk/pano_link.htm
- [4] <http://brickhaus.com/amoore/magazine/hughes.html>
- [5] <http://www.eurofresh.se/history/>
- [6] http://newman.baruch.cuny.edu/digital/2003/panorama/new_001.htm
- [7] <http://panoramaonview.org/index.html>
- [8] http://www.favreera.net/panorama_conference/panorama_conference.htm
- [9] James Rigg, Ray Yee: Panoguide, <http://www.panoguide.com>, 11/05.
- [10] Marek Ondik: *Prakticky: Urobte si vlastnu panoramaticku snimku*, PC REVUE, Numb. 8, August 2005, volume 8, pp.86-90.
- [11] <http://www.fh-furtwangen.de/~dersch/>