Virtual Reality 1

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1. Chapter 1: Introduction into Virtual Reality

1.1. Formation of Virtual Reality

The concept of VR

- capture things and thoughts which elude human
    - painting and stone sculpture (e.g. painting on the walls of cave)
    - complex physical models (e.g. Newton's Law)
- capture (copy) the reality & portray the reality for the purpose of a better understanding

VR before computer

- The first projector : Laternae Magicae (17c) **Figure 1.2, page 1-2**
    - optical system. a picture painted on a glass sheet and illuminated from behind with a candle
    - monoscopic
- Mirror-based stereoscope (C. Wheatstone, 1832) **Figure 1.3, page 1-2**
    - user can gain the impression of depth
    - very limited field of view
- Panorama (R. Baker, 1787) **Figure 1.4, page 1-3**
    - building (built at Leicester Square in London)
    - wider image than stereoscope: cylindrical images from height 10 14m, circumference 140m
    - still image (no move)
- Kaiserpanorama (19c) **Figure 1.5, page 1-3**
    - moving panorama image
- Head-Mounted-Display (Heilig & Sutherland, 1960) **Figure 1.6, page 1-4**
    - advances in the human-machine-interfacee, electronics and graphics hardware
    - the rise of VR in the entertainment industries
- Sensorama Simulator (M. Heilig, 1962) **Figure 1.7, page 1-4**
    - one person arcade game (control of bikes and cars)
    - stereovision / stereo sound / wind / realized scents
    - was not successful in the market
- Waller Gunnery Trainer **Figure 1.8, page 1-5**
    - 5 cameras and 5 projectors
    - used to train soldiers for the air force
- Cinerama **Figure 1.9~11, page 1-6~7**
    - 3 special cameras and 3 projectors ($146°$ wide $55°$ hight) but some problems...

- ∗ stitch problem
- ∗ geometric distortion
- ∗ color temperature differences
- ∗ sync by hand (Theatre engineers)
- ∗ odd orientation of the actors (no eye contact)
- – cylindrical shape screen

1.2. The development of the computer

1.3. Definitions

2. Chapter 2

3. Chapter 3

4. Chapter 4