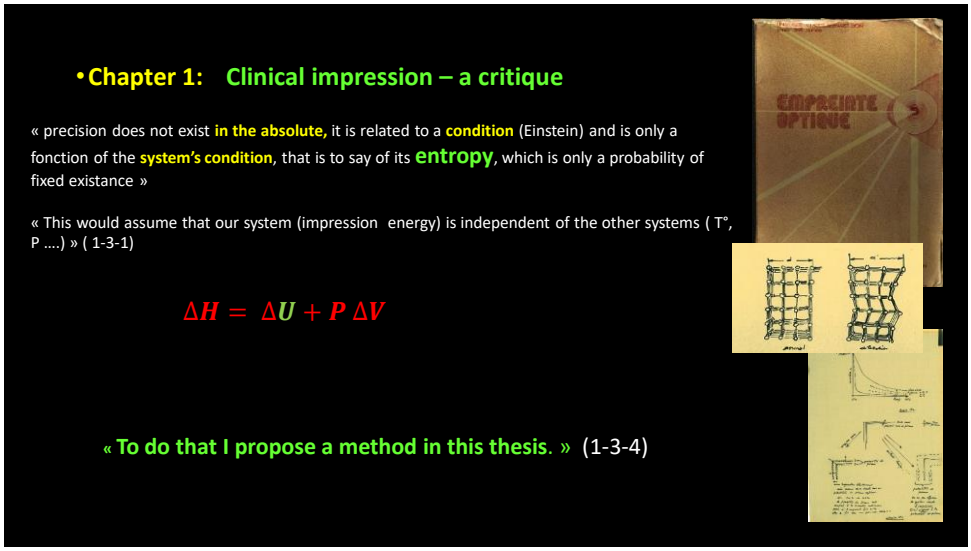
The most important drawings of my Thesis DDS/2nd cycle of 1973

“Optical impression” presented at the conference’s

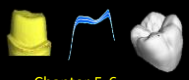
You will find these drawings in my 1973 thesis in French or English version explained during my présentation with my 1973 comments. (Buttons 1 and 2)

I now attach these same drawings as I presented them in Geneva in 2020, 47 years later, at my conference at the faculty for the launch of a new DU/Master specializing in digital dentistry (see conferences/lectures 2020)



- **Chapter 1:** Clinical impression – a critique
- **Chapter 2:** The Laser emission
- **Chapter 3:** Action on the organism
- **Chapter 4:** Hologram
- **Chapter 5:** Convertion A/D (analogic-digital)
- **Chapter 6:** Computer
- **Chapter 7:** Numerically-controlled machine tool (conversion D/A)
- **Chapter 8:** Machine tool
- **Chapter 9:** Summary and application to our profession

Chapter 1-4



Chapter 5-6

Chapter 7-8

1973

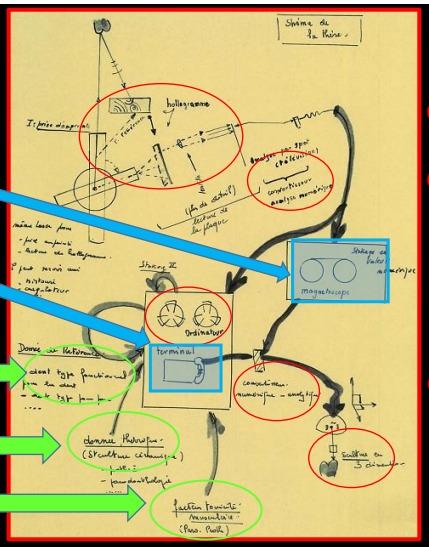
Cloud ??

Internet ??

biomorphology

Dental library

Dynamic Mv



Page 70

Optical impression

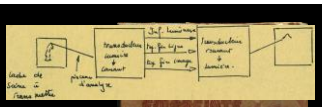
Converter A/D

Computer

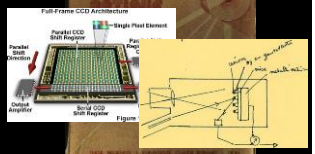
Converter D/A

3D Milling machine

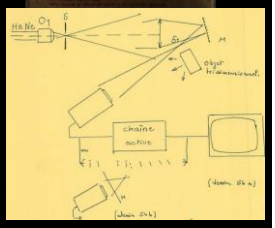
• Chapter 5: Conversion A/D (analogue-digital)



« this involves to decompose the image that we want to transmit into as many elementary points as possible and measuring the brilliance of each of these point …. (V-1-2-1) pp166 (= CCD)

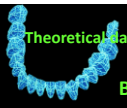


So to freeze our impression in 2 dimensions while gaining much time and without the inconvenience of the micro-palpitator we will use the hologram (interferométric view) (deferred time) or the television camera (real time). (V-4-3) pp177



« … the tension is thus translated into a binary system by a double-type converter or binary coded decimal (BCD today IHM) for communication with humans … (V-4-2) pp175

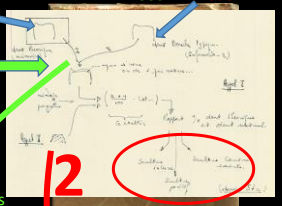
• Chapter 6: Computer



Theoretical data Tooth memory

Biomorphology

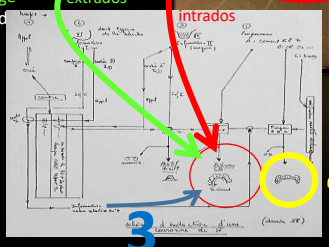
Tooth in mouth

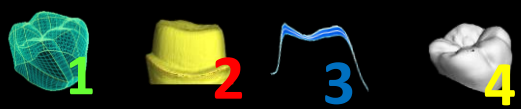


« However, by immediatly converting tension information from converter into a numeric form, the error ΔV will occur once, the only inconvenience is that the price can fluctuate considerably » (VI-I) pp180

« Sculpting (design) the exterior, info 1 the computer notes the average between theoretical teeth and teeth in mouth (wear, cust angle… and the computer will adapt the theoretical tooth to the volume of the preparation …. » (VI-3-5-2-1) pp187

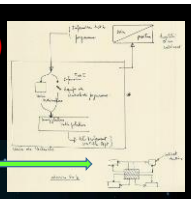
« Sculpting (design) the Interior's data can be increased theoretically thus permitting the passage of the chosen cement …. » (VI-3-5-2-2) pp187





Chapter 7: Numerically-controlled machine tool (conversion D/A)

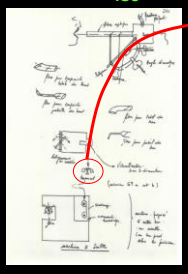
« Considering the treatment of information and the **programme send by teleprocessing (terminal)** …. The dentist would only have to control the milling and the reproduction and at the beginning ….» (VII-8) pp206

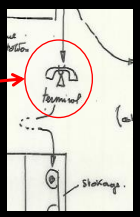


First Workflow

Terminal = modem

IOS





Computer

(Milling Machine)

•Chapter 8: Machine tool

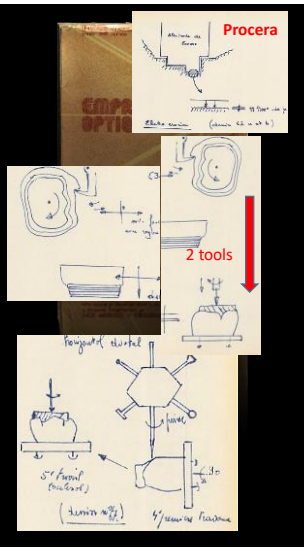
« the proposed micro-milling is divided **in two parts** « (introduction) pp 208

, the first one , the **unconventional** type is divided into 7 parts ……**electro-erosion**, electrochemistry, electroform, chemical milling, ultrasound milling, high process (electronic bombardement **… and laser (light) melting or soldering** … , » (introduction)

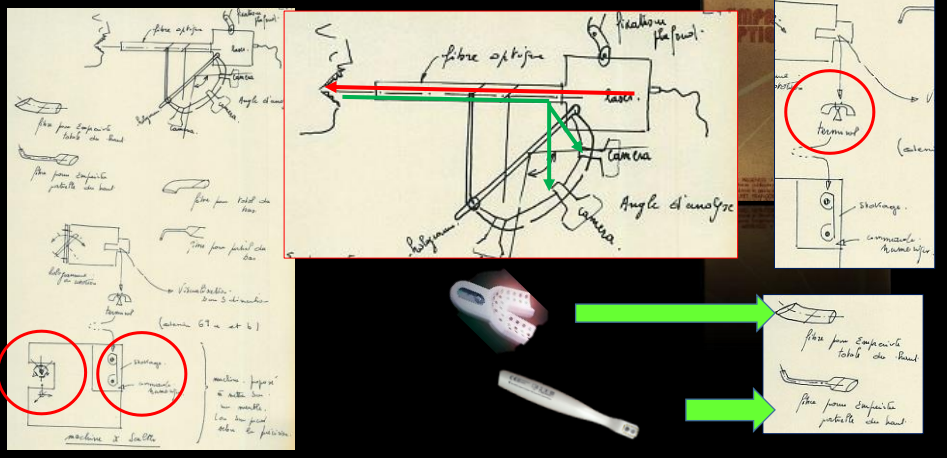
« in Electronic bombardement … the goal is to, **concentrate a beam of electron** on a metal …. During metallization, mettalic ions are projected … also **it is possible to deposit layers of various material** during a .. treatment the effect is quick » (VIII-6-2) p225

« The second one , **conventional** type … Only the last chapter about the **milling** …. Consists **of removing matter from a piece** in order to give it the shape and dimensions of a determined product … » (VIII-8-3-2) pp 208

« turning, … the part would turn from the top to the bottom … **which is perhaps the solution** » (VIII-8-3-3) pp 233

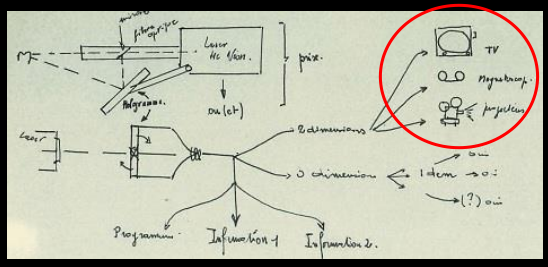


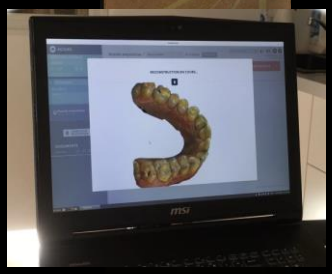
• Chapter 9: Summary and application to our profession



« Our role will be to link these techniques, to orient research on these links and to coordinate each specialist in his own phase»

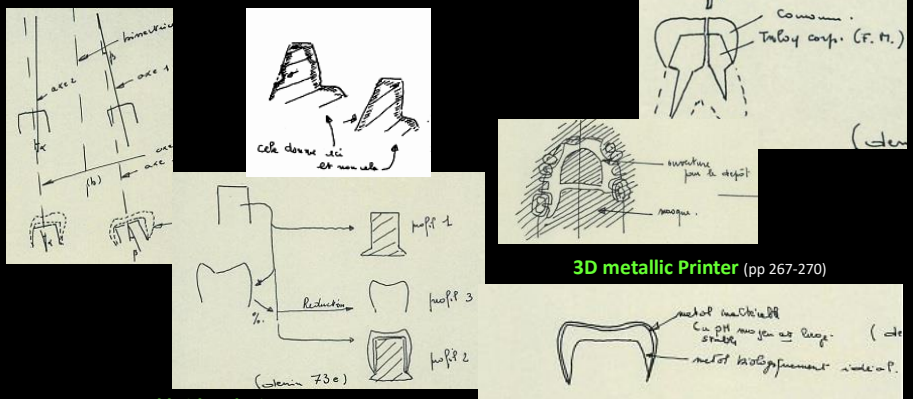
« **the evolution of esthetics (diagnostic)** of the mouth can be justified to the patient …. » (IX-2-3-1) pp 240





Diagnostic and scanning (pp 238)

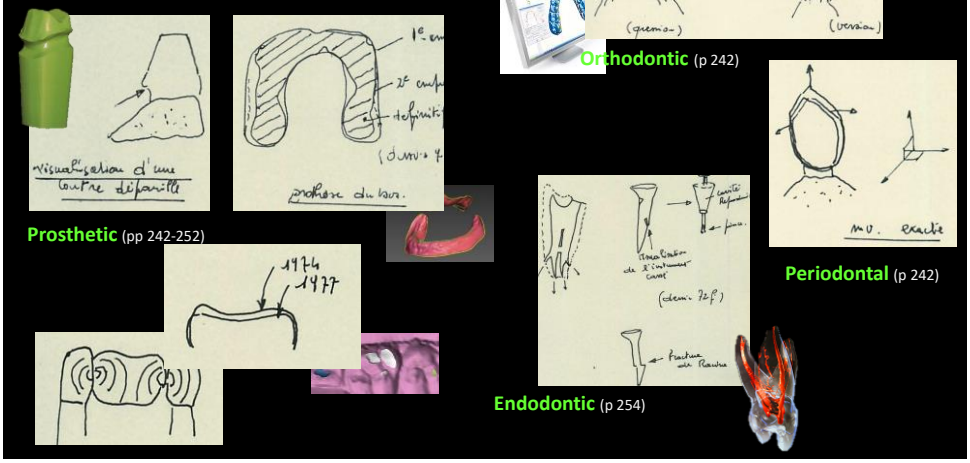
« But also ……»



CAD crown and bridge design (pp 261-263)

3D metallic Printer (pp 267-270)

« But also ……»

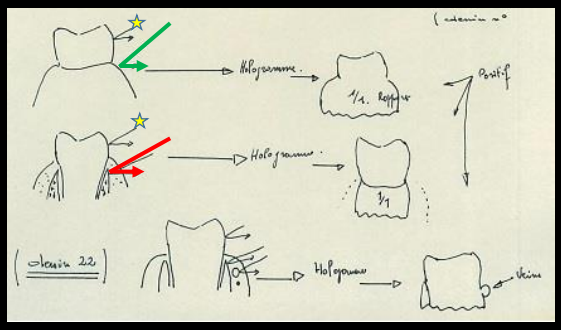


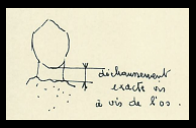
Prosthetic (pp 242-252)

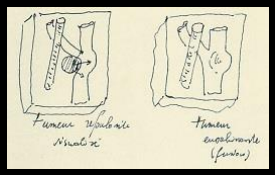
Orthodontic (p 242)

Periodontal (p 242)

Endodontic (p 254)



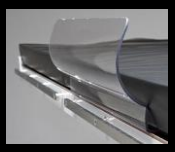


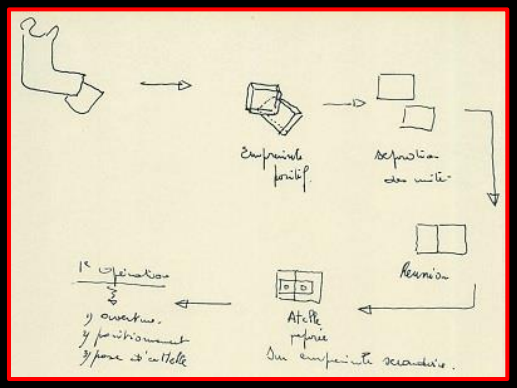


« concept of Cone Beam » and Optical impression ?? (page 72)

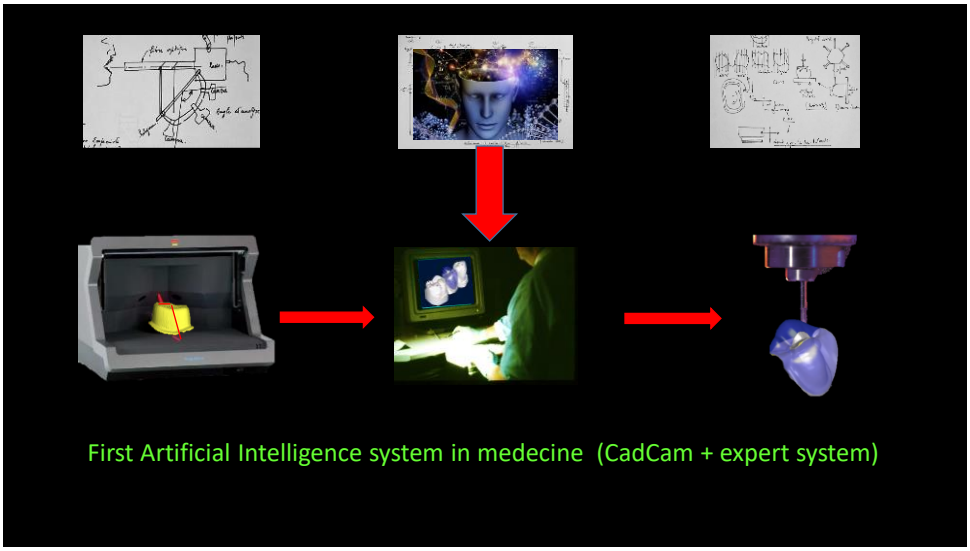
« 1° if the tooth is either healthy, we take optical **impression before and after cutting**
2° in the other case, the computer is necessary ..... » (IX-2) p 237

3° in surgery the impression is done before opening ..... » (IX-2) p 248





Combine « cone Beam » and Optical Impression for diagnostics



First Artificial Intelligence system in medecine (CadCam + expert system)