

# Les dessins les plus importants de ma Thèse DDS/2<sup>e</sup> cycle de 1973

## « Empreinte Optique » présentés en congrès

Vous trouverez ces dessins dans ma thèse de 1973 en Version française ou anglaise expliqués durant ma soutenance avec mes commentaires de 1973. (Boutons 1 et 2)

Je joins maintenant ces mêmes dessins tels que je les ai présentés à Genève en 2020, 47 ans plus tard, lors de ma conférence à la faculté pour le lancement d'un nouveau DU/Master spécialisé en dentisterie numérique (voir conférences/lectures 2020)



1973

DDS in June 1973 for correction  
« Optical Impression »  
288 pages and 312 bibliography Refs,

Duret F. Empreinte Optique, n° 273 you DDS 1973-4, 288 pages.  
(www.francisduret.com)

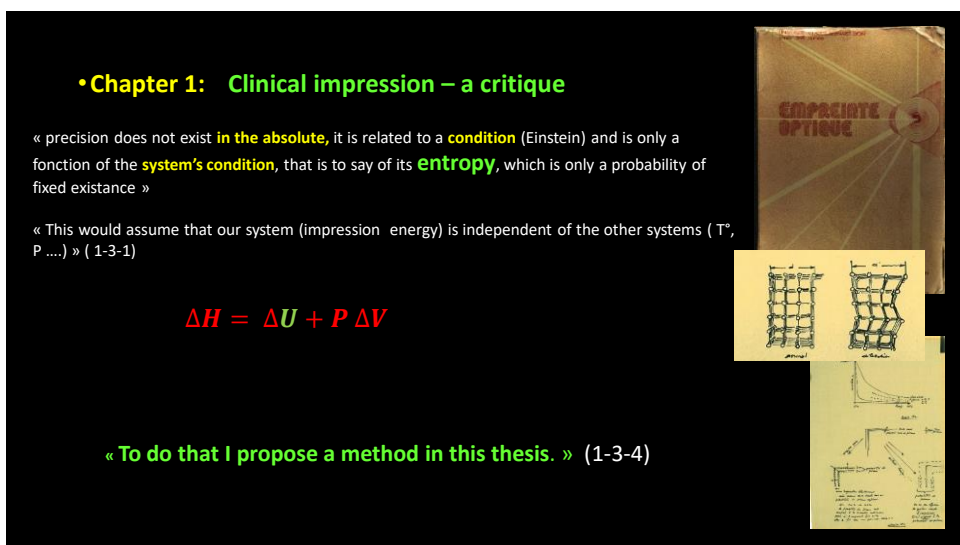
• **Chapter 1: Clinical impression – a critique**


« precision does not exist **in the absolute**, it is related to a **condition** (Einstein) and is only a fonction of the **system's condition**, that is to say of its **entropy**, which is only a probability of fixed existence »

« This would assume that our system (impression energy) is independent of the other systems ( T°, P ....) » ( 1-3-1)

$$\Delta H = \Delta U + P \Delta V$$


« **To do that I propose a method in this thesis.** » (1-3-4)






Chapter 1-4

- Chapter 1: Clinical impression – a critique
- Chapter 2: The Laser emission
- Chapter 3: Action on the organism
- Chapter 4: Hologram
- Chapter 5: Conversion 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

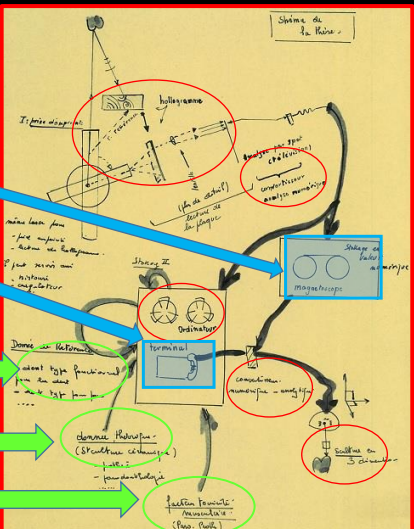


Chapter 5-6



Chapter 7-8

1973



Page 70

Cloud ??

Internet ??

biomorphology

Dental library

Dynamic Mv

Optical impression

Converter A/D

Computer

Converter D/A

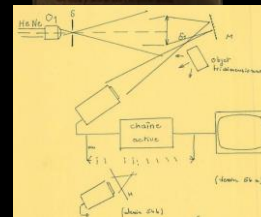
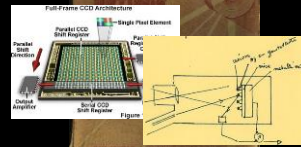
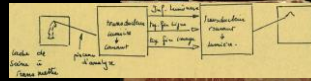
3D Milling machine

• 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 (interferometric 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

« However, by immediately converting tension information from converter into a numeric form, the error  $\Delta V$  will occur once, the only inconvenience is that the price can fluctuate considerably » (VI-1) 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

Theoretical data Tooth memory

Biomorphology

1

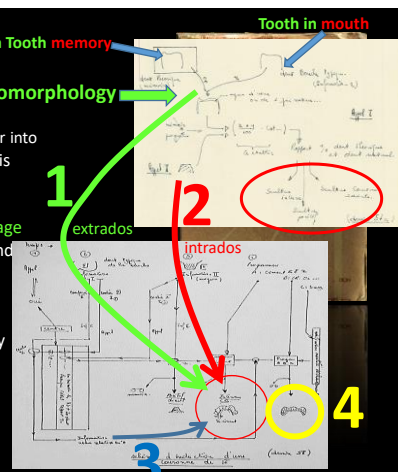
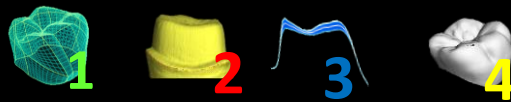
extrados

2

intrados

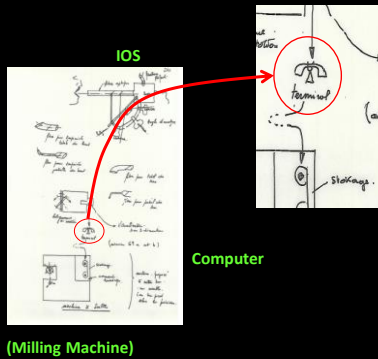
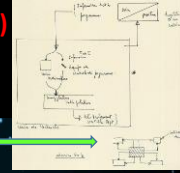
3

4



## 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



Terminal = modem

First Workflow



## Chapter 8: Machine tool

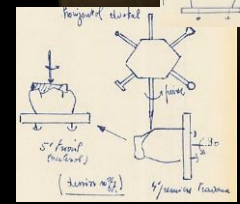
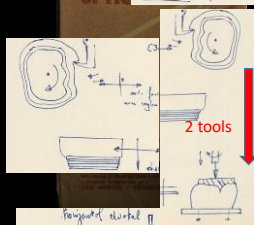
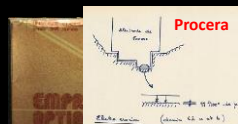
« the proposed micro-milling is divided in two parts » (introduction) pp 208

, 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)

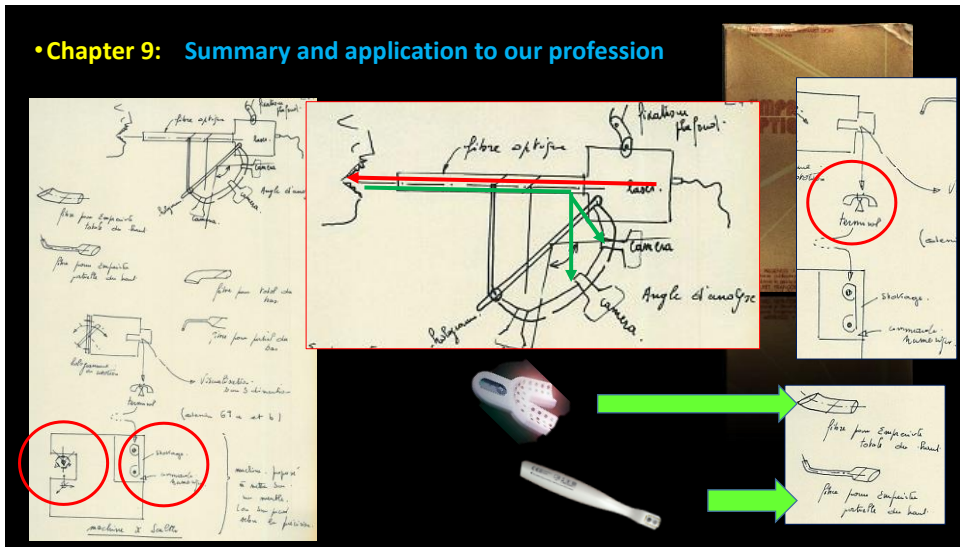
« in Electronic bombardement ... the goal is to, concentrate a beam of electron on a metal .... During metallization, mettalic ions are projected ... also it is possible to deposit layers of various material during a .. treatment the effect is quick » (VIII-6-2) p225

« 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

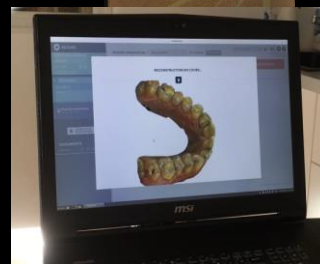
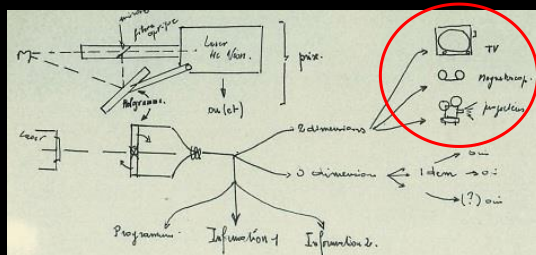


•Chapter 9: Summary and application to our profession



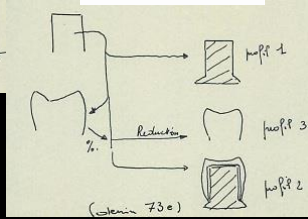
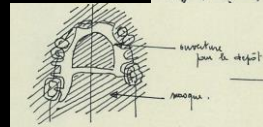
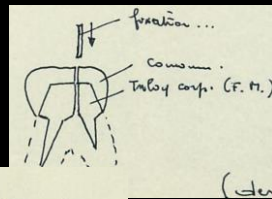
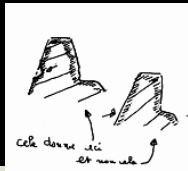
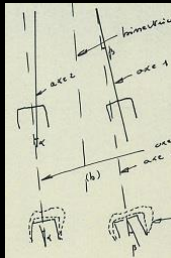
« Our role will be to link these techniques, to orient research on these links and to coordinate each specialist in his own phase»

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

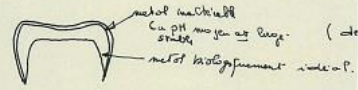


Diagnostic and scanning (pp 238)

« But also ..... »

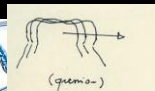
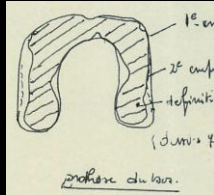


3D metallic Printer (pp 267-270)

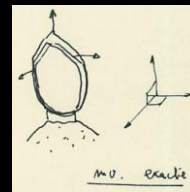


CAD crown and bridge design (pp 261-263)

« But also ..... »

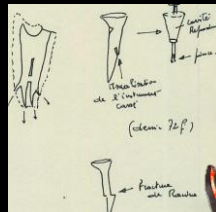
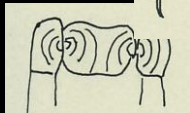
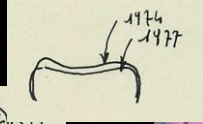


Orthodontic (p 242)



Periodontal (p 242)

Prosthetic (pp 242-252)



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

