

The emergence of the profession of *Mathematical & Philosophical Instrument Maker* in the 17th century Dutch Republic








HUIB ZUIDERVAART
NIAS - WG2 - 19 July 2016



Instruments:

Requirement for making measurements:

- in surveying
- in astronomy
- in navigation
- fortification
- for taxes on land
- etc.



The elite culture of collecting

In the elite culture of collecting, 'Status' was of great importance. 'Learned' instruments were part of this.








Hans Holbein
The Ambassadors (1533)

3

Instruments:

A tradition in making fine mathematical instruments emerged in the 16th-cent. Southern Netherlands, centered around the **University of Louvain**



Gemma Frisius



Gemma's nephew, Arsenius, 1567



Instruments:

A tradition in making fine mathematical instruments emerged in the 16th-cent. Southern Netherlands, centered around the **University of Louvain**






Astrolabia:

Adriaan Zeelst, 1566
Gualterus Arsenius, 1572
Cerard Mercator, ca. 1570
Egidius Coignet


Instruments:

Instrument making in the Dutch Republic is only known from the 17th C.

1609: Oldest dated mathematical instrument made in the Northern Netherlands:

Pibo Gualteri from **Franeker**.
Student of **Adriaen Metius**.

(famulus of Tycho Brahe and professor at **Franeker University**)



Instruments:

Instrument making in the **Dutch Republic** is only known from the 17th C.

c. 1625: Large Quadrant for **Willebrord Snellius** (professor at Leiden University)

made by: **Willem Jansz [Blauw]** from Amsterdam, (famulus of Tycho Brahe)



For now: focus on Leiden

1600: founding '**Duytsche Mathematique**' at **Leiden University** for the training (in the vernacular) of surveyors and engineers.



Ludolph van Ceulen, first Professor DM

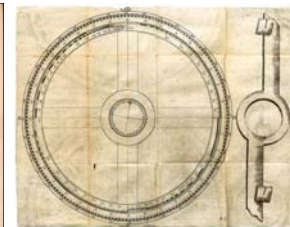
Jan Pieterzoon Dou

In **1612** an improved surveying instrument was introduced by the Leiden surveyor and notary **Jan Pietersz Dou**

This 'mathematical' instrument emerged from his own experience during the surveying of the new **Beemster Polder** in 1609.



'Jan Pieterzoon Dou'



Paper circumferentor, with compass and rotating alidade with sighting vanes ('**Hollandse Cirkel**', or '**Astrolabium**')

'Jan Pieterzoon Dou & Ian David'



*De form vant Instrument sal zijn een **ronden Cirkel**, soo groot als dit afgedructe exemplae[r], [...] elck **ghemaect van gelu Coper**, so dattet niet lichtelijck om ghebogen can werden,,*

*twelck by **Ian David**, **Mathematische Instrument-maker** alhier tot **Leyden** zeer constelijck ghedaen wert.*

'J. David' – Leiden



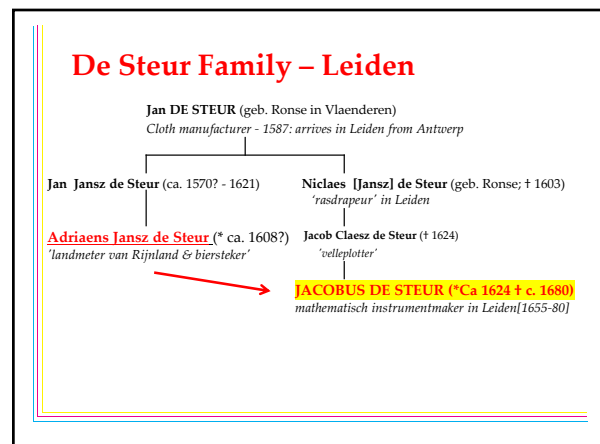
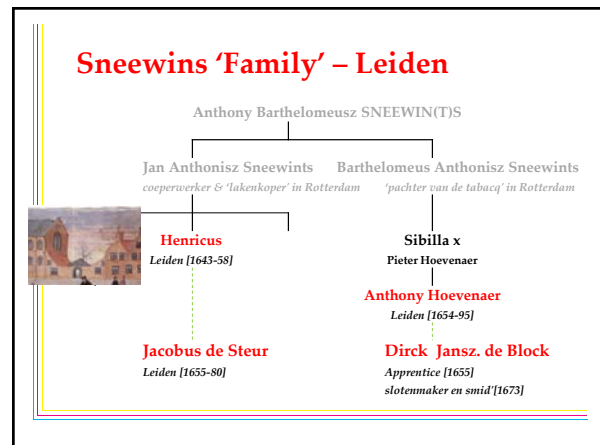
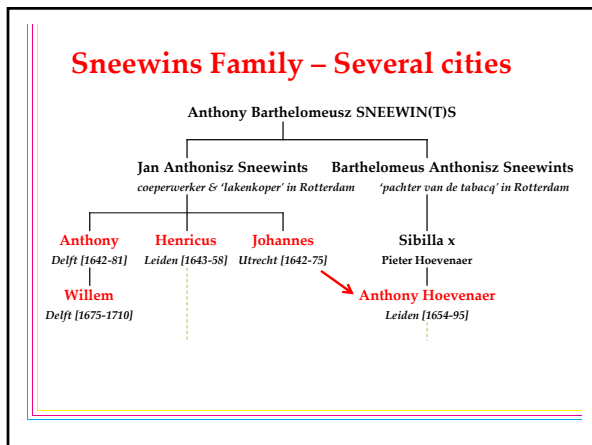
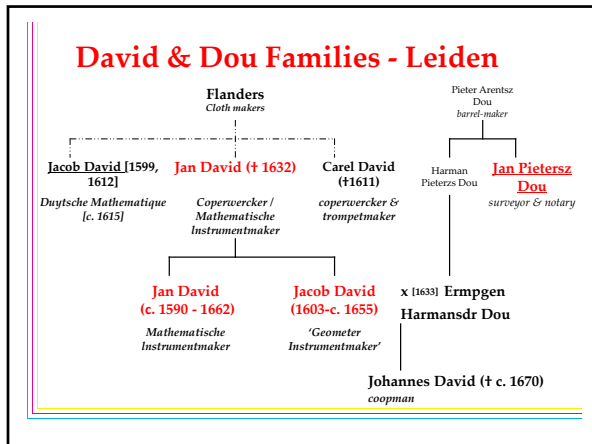
The oldest known brass circumferentor ('**Hollandse Cirkel**') is dated 1640

Made abundantly during two centuries.

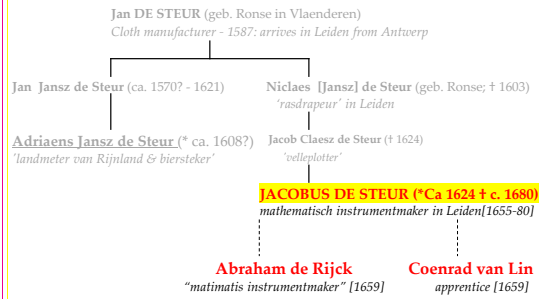


"The only thing that was dropped almost instantly was Dou's trigonometric scales: the core of his innovation!"

[Cocquyt, 2015]



De Steur 'Family' – Leiden



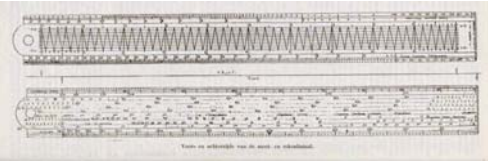
Products:



Measuring Rod



1642 – Anthony Sneewins – Delft [1642-1681]



Astrolabium with compass ('Hollandse Cirkel')



Henricus Sneewins



Anthony Hoevenaer



Jacobus de Steur

Graphometer with compass



Anthony Sneewins



Johannes Sneewins



Willem Sneewins

Surveyors triangle

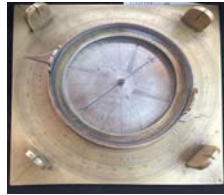


Anthony Hoevenaer - Leiden

Surveyors compass with sights



Johannes Sneewins - Utrecht

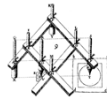
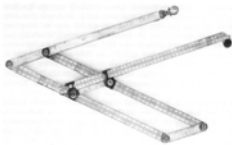


Protractor with rods and sights



Anthony Sneewins - Delft

Pantograph

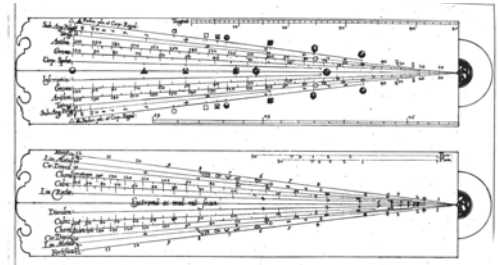


Henricus Sneewins

Jacobus de Steur



Sector, or 'Proportionalpasser'



Henricus Sneewins - 1656

Sector, or 'Proportionalpasser'



Anthony Sneewins

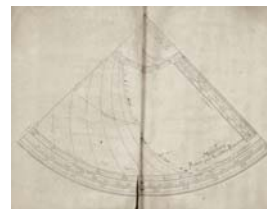


Anthony Hoevenaer



Johannes Sneewins

Lansbergen's quadrant



Lansbergen's quadrant



1645 – Anthony Sneewins



Astrolabium



Anthony Sneewins – Delft [1642-81]



Astronomical ring



Henricus Sneewins – Leiden [1643-58]



Astronomical Compendium

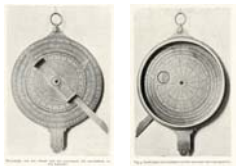


Anthony Sneewins – Delft

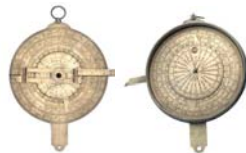


Willem Sneewins – Delft

Nocturnal, calender, tide pointer



Anthony Sneewins – Delft



Willem Sneewins – Delft

Sundails (= horology)



Anthony Sneewins



Henricus Sneewins

Sundial Delineator



Anthony Sneewins



Willem Sneewins

Mechanical horology



Anthony Hoevenaer – (ca. 1665) –
Oldest standing clock, made in Holland

Products: similar as in England



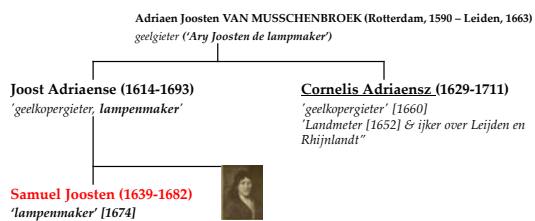
Elias Allen
(1588-1653)

Very different products:



Van Musschenbroek Family – Leiden:
Makers of brass oil lamps and round tin containers

Van Musschenbroek Family – Leiden



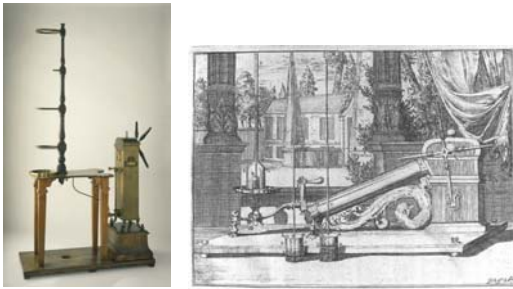
Very different products: Syringes for anatomical preparations



Invented by Reinier de Graaf in the mid-1660s for anatomical preparations, made by Samuel van Musschenbroek - Leiden.

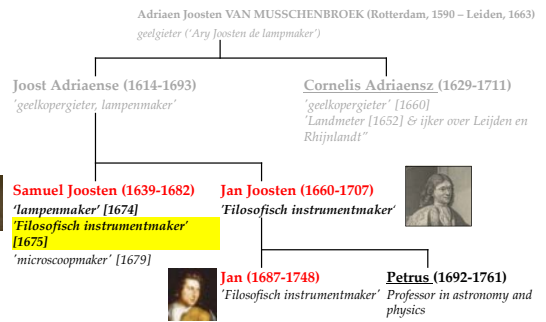


Samuel van Musschenbroek - Leiden

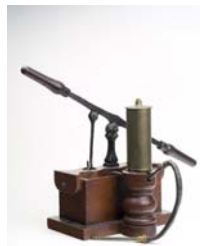


Air Pumps, designed by Burchard de Volder [1675 onwards ...]

Van Musschenbroek Family – Leiden



Jan Joosten van Musschenbroek



Fire extinguisher, undated

1679 Also Microscope Maker



Samuel Joosten van Musschenbroek



Stimulated by Chr. Huygens & Leeuwenhoek's success

1715 – Anthony van Leeuwenhoek:

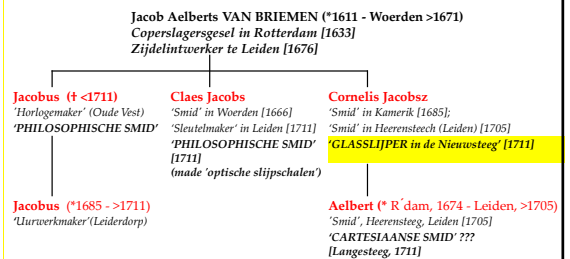
[...] want door mijne ontdekkinge, en slijpen van glaasen sijn veele studenten tot Leijden aan gemoedigt, ende **daar sijn drie glaase slijpers geweest**, waar bij de studente het glaase slijpen gingen leeren, maar wat isser uijt voort gekoomen. Niet soo veel mij bekend is, [...]



3 lens grinders? Most likely:

1. Jan Joosten van Musschenbroek
2. Cornelis van Briemen
3. François Veeckens

Van Briemen Family – Leiden



François Veeckens – Leiderdorp

Van Musschenbroek → **FRANCOIS VEECKENS (1646 -> 1705)**




Abraham Veeckens
'Coopman' in wool [1634]

??? →


Coopman' in wool [1670]
Optical instrument maker [1690-1705]
Leiderdorp

Made:

- * Telescopes
- * Microscopes
- * Camera Obscura
- * Gadgets



Portrait Jan jr & Petrus van Musschenbroek



Air Pump

Own production

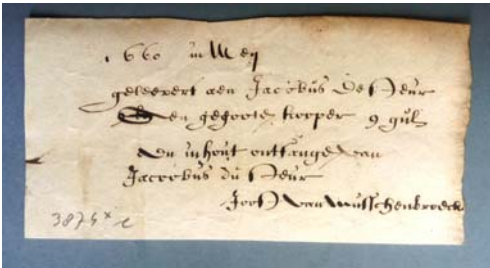
Lansberg
Quadrant

Celestial
Globe

Sector or
'Proportional
Passer

Retail from
**other
makers**

1660: Network Jacobus de Steur



Delivery to De Steur of casted brass by Joost van Musschenbroek

1660: Network Jacobus de Steur

Toussain Barbery

Weduwe Poulus Jonasz Geelgieter (A'dam)

BRASS SUPPLIERS

Cornelis Adriaenz van Musschenbroek

Joost Adriaense van
Musschenbroek

JACOBUS DE STEUR
(*Ca 1624 † c. 1680)

1660: Network Jacobus de Steur

ARTISANS:

* Lucretia Sneewins

* Anthony Hoevenaer

* Davidt le Roy
Watchmaker

* Quirijn de Wilde
jeweller

JACOBUS DE STEUR
(*Ca 1624 † c. 1680)

1660: Network Jacobus de Steur

UNIVERSITY PROFESSORS

JACOBUS DE STEUR
(*Ca 1624 † c. 1680)

*Johannes Antonides van der
Linden*

*Franciscus de le Boë
Sylvius*

Johannes de Raai

Frans van Schooten jr.

