

Our soil map as cultural heritage: What of the Belgian soil survey project should be preserved and what is being lost?

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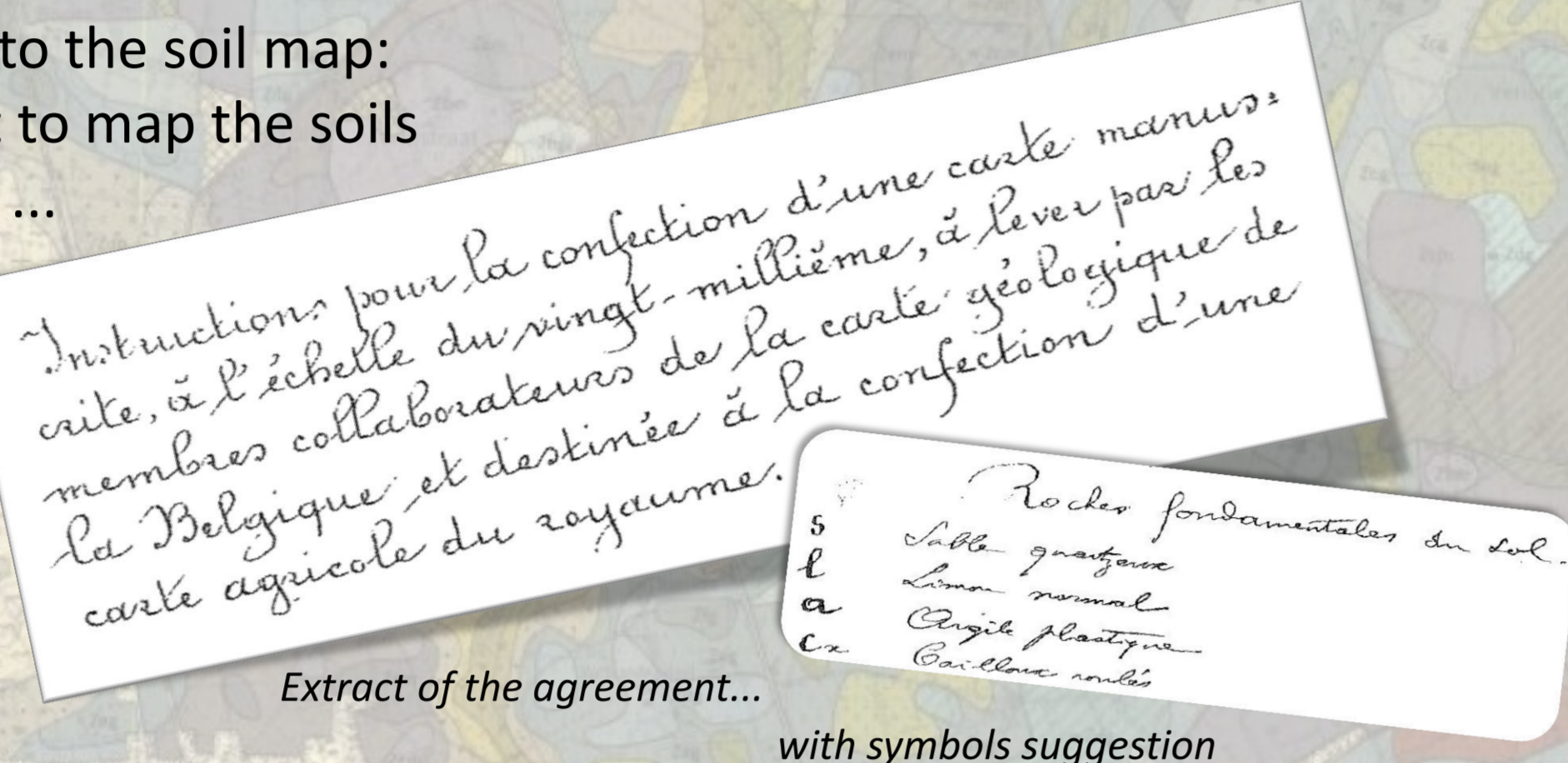
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Historical context

mid-XIX^e S. – Beginnings, with strong geological influences:
first agro-geological maps at small scale (Dumont, 1853 ; Malaise, 1867).

1893 – a milestone on the road to the soil map:
a governmental project to map the soils of Belgium at large scale ...
which failed
due to financial difficulties and the prevailing context of fertilizer success.



Extract of the agreement... with symbols suggestion

1947 – Initiative to map systematically the soils of Belgium, in a post-war context ...
with the agricultural objective of striving to food security.
Influence of soil survey and classification works in the USA (G. Smith) and in Europe (Kubiëna, ...).

> 2000 – Digitalization of the Soil Map of Belgium, thanks to the advent of GIS technologies and need for soil information out of environmental concerns along with awareness of soil many functions and threats.

6E-Kalmthout

Soil Survey in a nutshell

Soil survey from 1947 to 1991
+ 30 chief surveyors, + 100 surveyors
+ 6 000 000 soil augerings (~ 2/ha)
+ 450 sheets (8 x 10 km)
+ 1 000 series, + 10 000 soil map units (SMU)

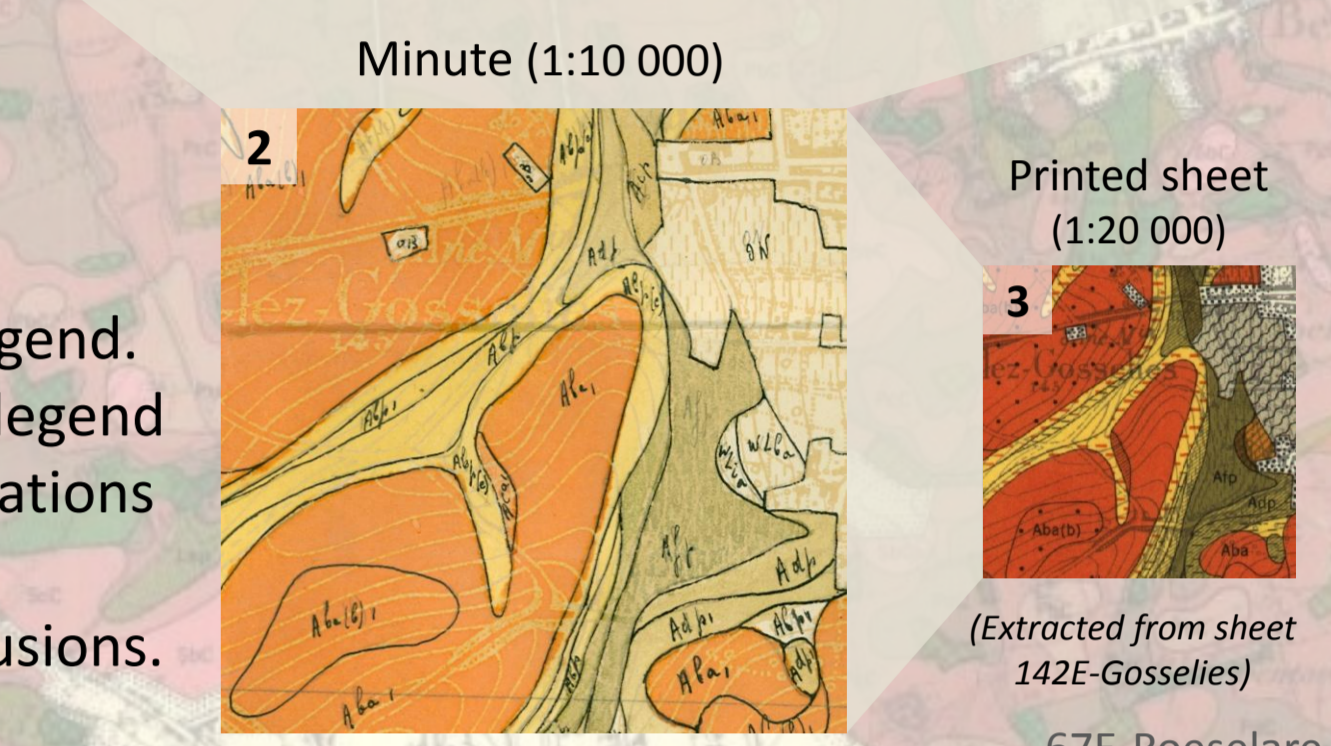
From the field to the sheet:

- 1 – Field observations (morphological features transcribed by a combination of symbols) and SMU delineation on cadastral plans.
- 2 – Generalization on topographic base maps.
- 3 – Edition with a coloured and structured legend.

If the printed sheets are the most striking output, a wealth of information is entailed in the numerous intermediate products.

For example:

1. Location of the soil augerings, with the observed soil typological units (STU) and according to preliminary legend.
2. Delineation with symbols according to a standardized legend but more detailed than in the final sheet. Some delineations disappeared due to generalization due to the scale.
3. The SMU variability is highlighted by possible STU inclusions.



Printed sheet (1:20 000)

(Extracted from sheet 142E-Gosselies)

67E-Roeselare

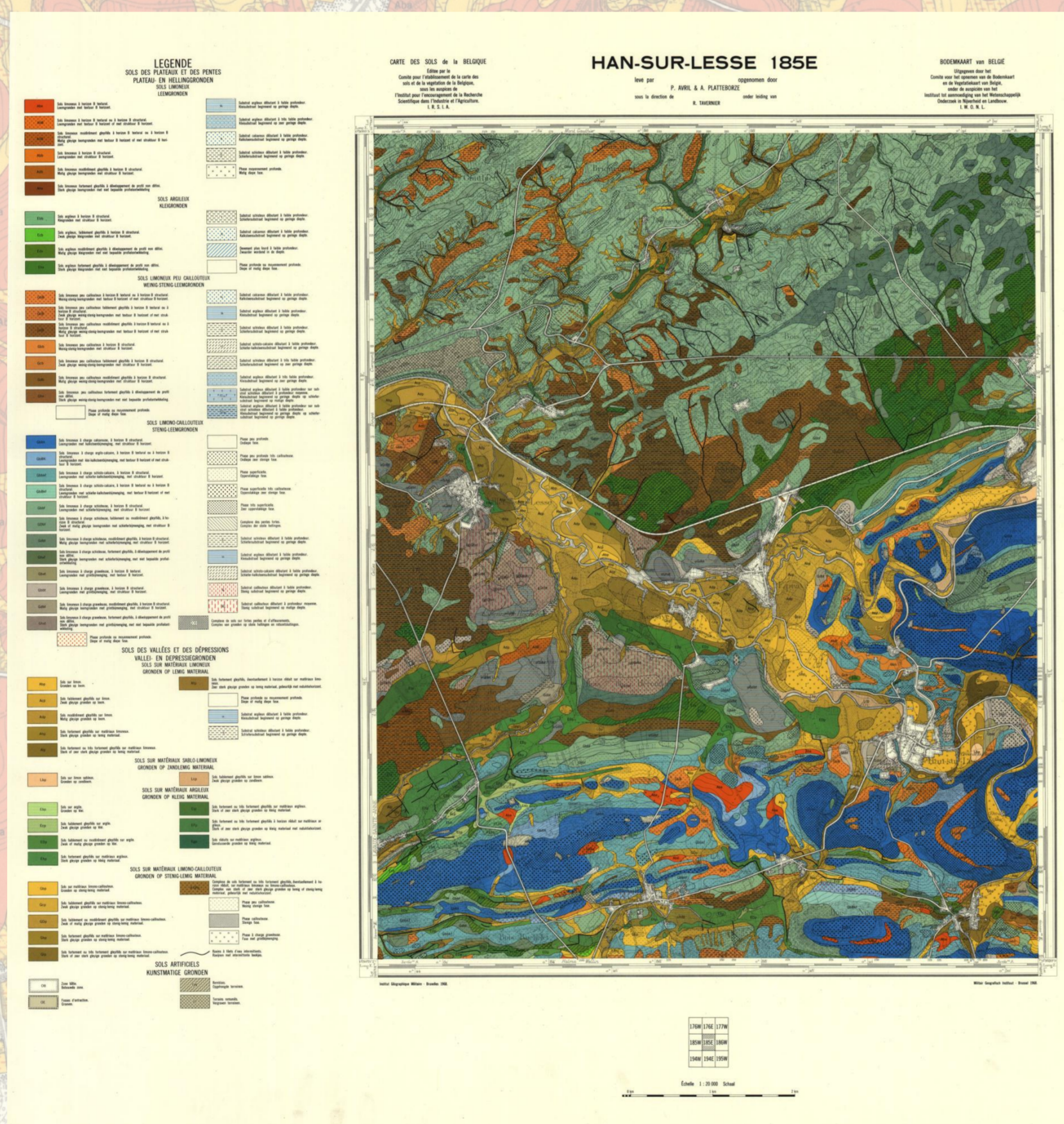
Heritage lying in a map sheet

The **legend**, its structure and codes, were developed during the first decade of the survey, reflecting state of knowledge on soil formation and relative importance of observed criteria for agricultural land-use in the 1950s. It's the fruit of many discussions, confrontations, maturations and harmonization.

The palette of **colours** betray the influence of the geological school, especially for stony soils, and illustrate the command by IGM/IGN of printing techniques at that time.

Each sheet mentions the **author**. Even though effort were made to standardize this collective work, specificities in terms of perception and cartographic rendering can be discerned.

The **date** is a key information to take into account the chronological context.

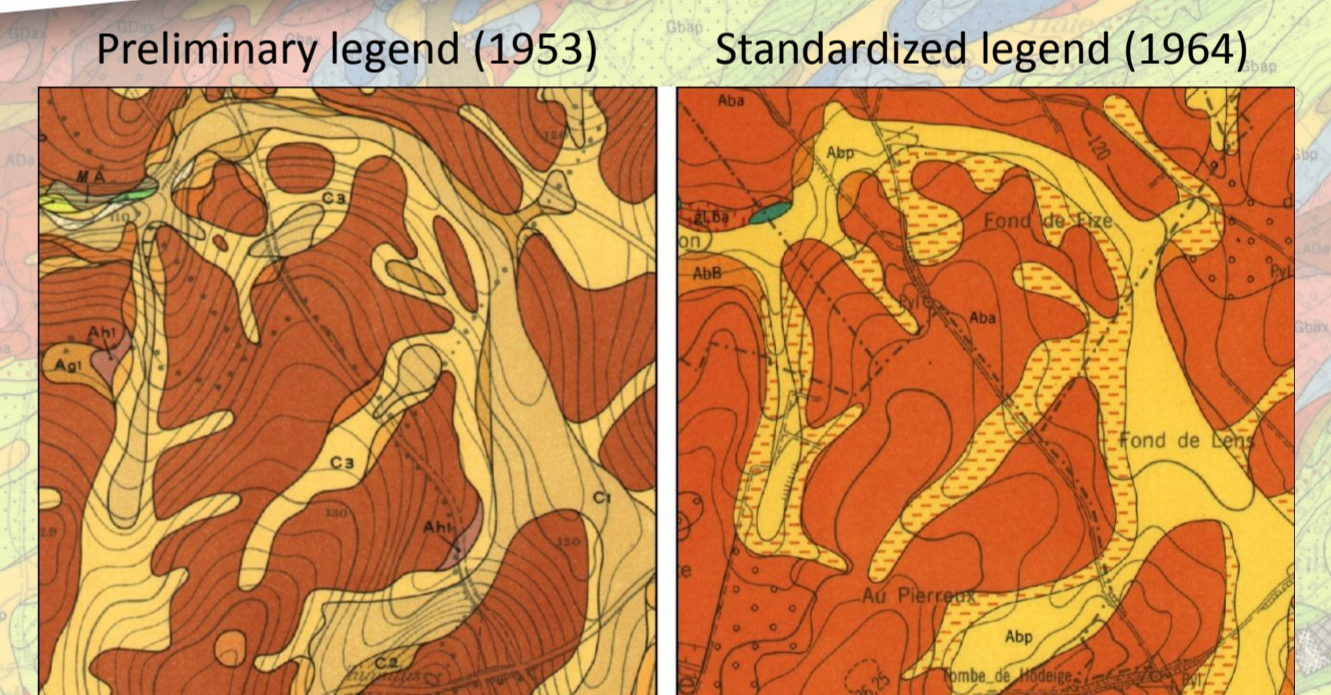


120W-Waremme

Soil survey is more than maps

The Belgian soil survey also provided:

- Associated products as
 - ✓ explanatory booklets (one per sheet)
 - ✓ soil association maps
 - ✓ 15 000 profiles described and analyzed
 - ✓ regional monographs
 - ✓ scientific papers (e.g.: more than 50 articles in the journal *Pédologie*)
- Unpublished documents
 - ✓ cadastral plans and minutes
 - ✓ field notes
 - ✓ draft maps
 - ✓ excursion reports
 - ✓ letters
 - ✓ proceedings of working groups
 - ✓ course handouts
 - ✓ technical documents
 - ✓ annotations of documents



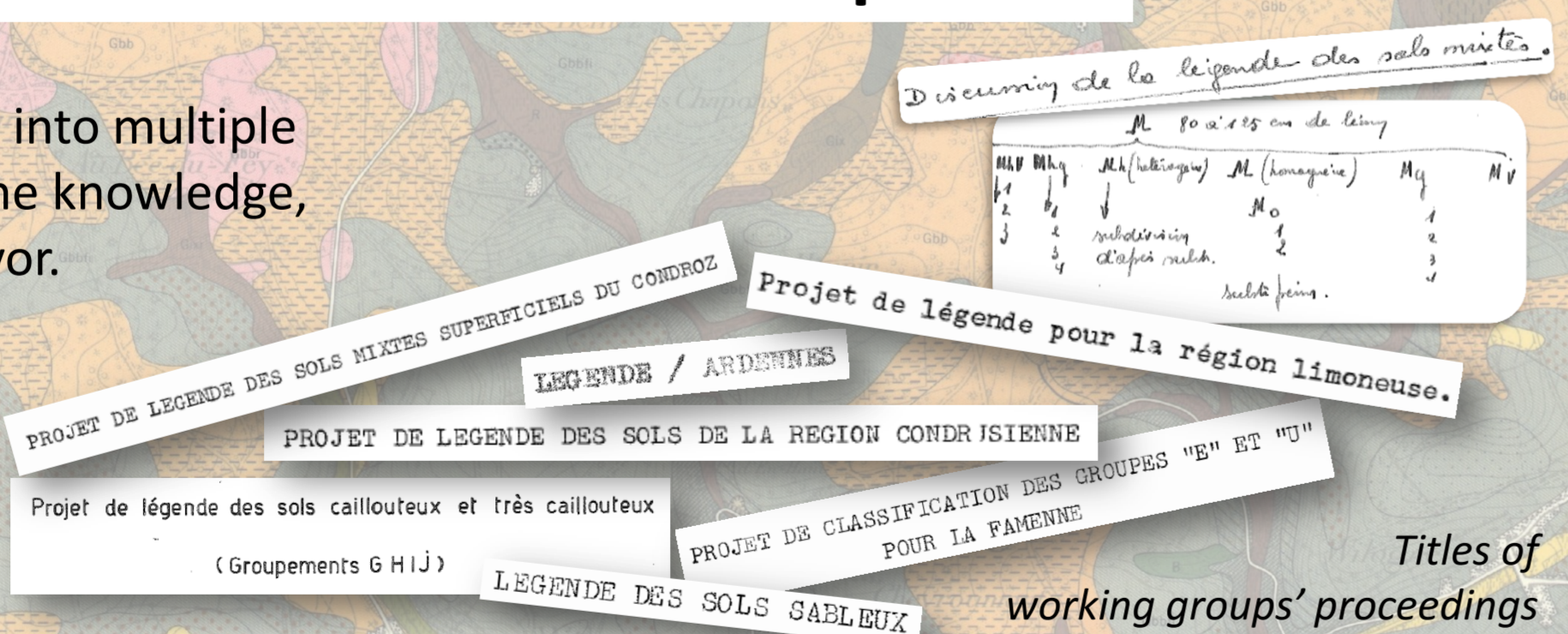
Two editions of sheet 120E-Momalle. Observations:
- Simplification of the mapping units.
- Not unequivocal transcription between the two legend systems (based on field observations and expert knowledge).
- Adaptation of the delineation to the isohypses, illustrating the fact the relief is taken into account for mapping.

167E-Ciney

Diversity vs standardization: a seesaw process

The varied pedological context resulted into multiple approaches, which also depended on the knowledge, experience and sensitivity of the surveyor.

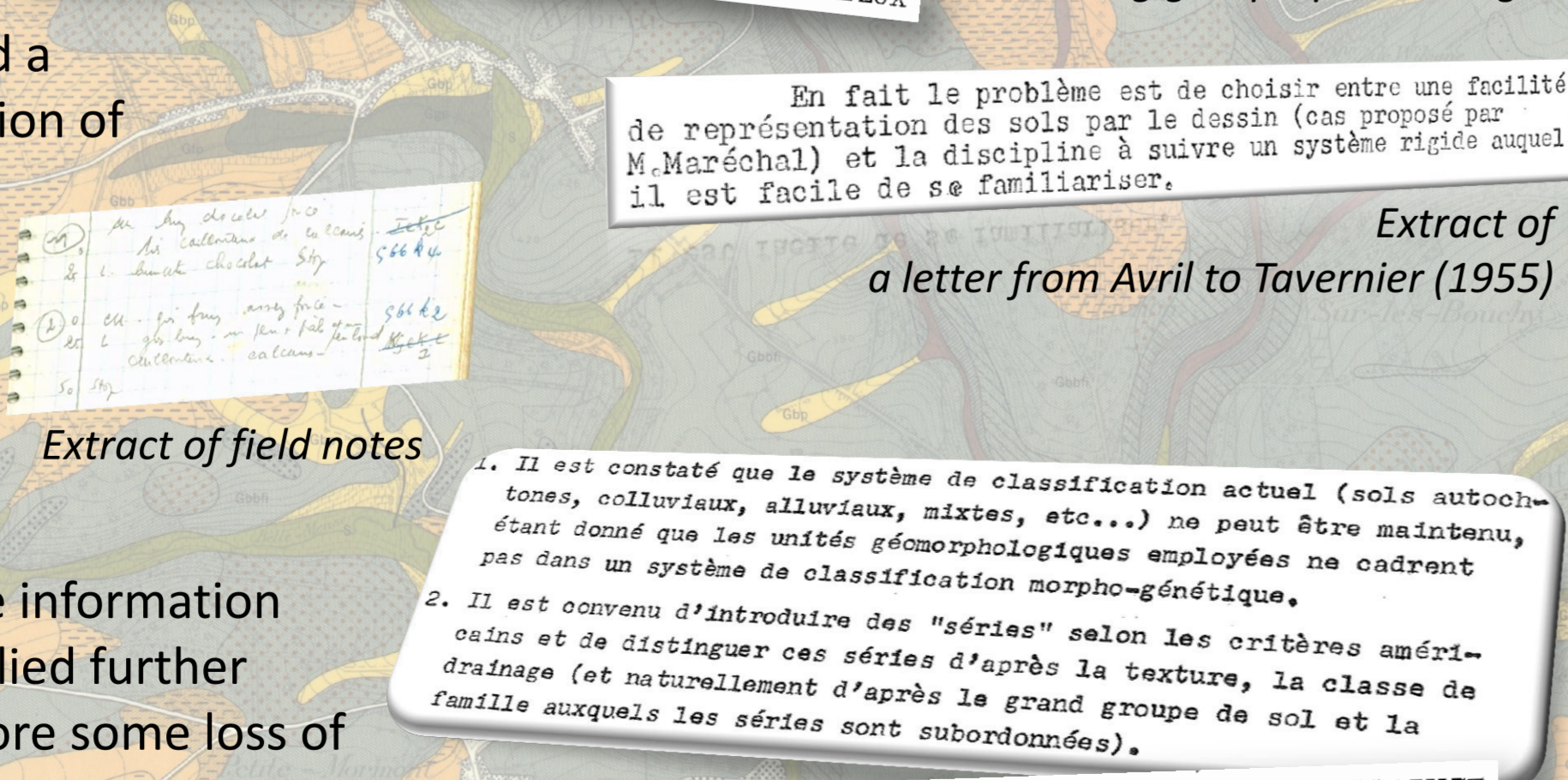
CONSOLIDATION



Titles of working groups' proceedings

A coherent national soil survey required a harmonization of the legend and adoption of conventional definitions.

DIGITALIZATION



Extract of field notes

Extract of a letter from Avril to Tavernier (1955)

The digitalization, though rendering the information more accessible and better usable, implied further standardization of the data, and therefore some loss of information.

Currently, modern techniques and tools allow integrating and managing part of this so far neglected but valuable information.

LES UNITÉS DE CLASSIFICATION ET DE CARTOGRAPHIE CLASSIFICATION DES SOLS DE LA BELGIQUE
Extracts of working groups' proceedings and technical documents

188W-Wibrin

Preserving our heritage for constructing the future

Going through the archives of the soil survey project is our best proxy for following the surveyors footsteps. Though we cannot grasp their intangible expert knowledge, it greatly helps:

- understanding the historical context and state of knowledge on soil genesis prevailing at that time ;
- perceiving the diverse influences guiding their works and choices throughout the project ;
- appreciating nuances and implicit information hidden under the harmonized legend.

By integrating into the digital pool of information archive and historical data, new products can emerge, meeting current needs and issues at both local and international level. Some examples of recent or planned products benefiting from archives' information:

- new explanatory booklets, compiled by regional physical units ;
- small (1:250 000) to median scale (1:50 000) soil maps converted into the WRB system ;
- transfer of the historical soil descriptive and analytical data in relational database ;
- regional soil information systems.

Finally, as most of the soil surveyors have already passed away, it is judged important that at least a minimum set of such a legacy would be preserved, analyzed and documented as a historical, cultural and scientific heritage to guarantee that future generations will be able to appreciate the value and concepts underpinning the soil information.

We have clearly to act as dwarfs standing on the shoulders of giants.

223W-Saint-Léger