Learning and using the tidyverse for historical research

@vivalosburros
jessesadler.com
github.com/jessesadler

Jesse Sadler
Loyola Marymount University


DANIEL. VANDER.
MEVLEN.
A°1583.
HESTER.DELLA.
FAILLE.
A°1583.

Laus deo Sa^r 1586 adi 17 decembrio millo nono In londra

Amfrere Ende broeder ick ghebiede my hertelycken In v. L. goede
gratie dese voerleden daghen over hollant hebbe ick v. L. mynen lesten
gescreven, Ende hebbende d'commoditeyt van Een Joncheman thuys by
hoorn die op Embden vaert hebbe niet connen laeten v. L. te adverteren
dat ick op ghesteren alsoo coteels op de costume was zyne wolle weghen
ben ick In huys ghevallen Ende hebbe de kiste met £ 2134 // // st weck
ghevoert Ende zoo mede de boecken vanden sterfhuyse Ende zoo oock de
boecken van martens Eyghen negotie Ende hebbe de zelve al we[g]
ick meynden noch meer mede ghenomen te hebben dan my ghebrac[k]
hulpe Ende tyt hebbe niet bouen 3/4 vrs tyt gehadt want hy we[rt] haelt
Ende quamp Ende overviel my zoo datty my zoude doersteken hebben
hadde ick niet geassisteert geworden want ick En hadde spelle scarp
Ende heeft wel 20 mael gesworen datt ick van gheene andere hande sterven
zal als vande zyne, maer tselve is hem verleert Ende millord mayer
heeften doen lichten Ende daervoren borghe doen stellen datty my niet
sal misdoen Ende meynden my oock met vuysten te slaen maer hy
misten Ende werdt degelycken ontfanebaer nu de zaecken zyn wel
vergaen maer noch niet al gheeyndt ick hebbe syn Eyghen boecken tegen
de boecken vant sterfhuys geconfronteert Ende wy vinden datty alle onse
schulden ontfanghen heeft daer En failleert gheen £ 300 st aen dat
goede schulden gerekent worden ick hebbe oock Een zyde van £ 540 st
van willem Edwarts gevonden den twelcken te lande vuyt geloopen
Is laet die schult tot onse laste staen Ende heeftse ontfanghen Ende hy
zeltse niet te boecke In somma daer En gebreckt gheene vuylicheyt

Power of coding

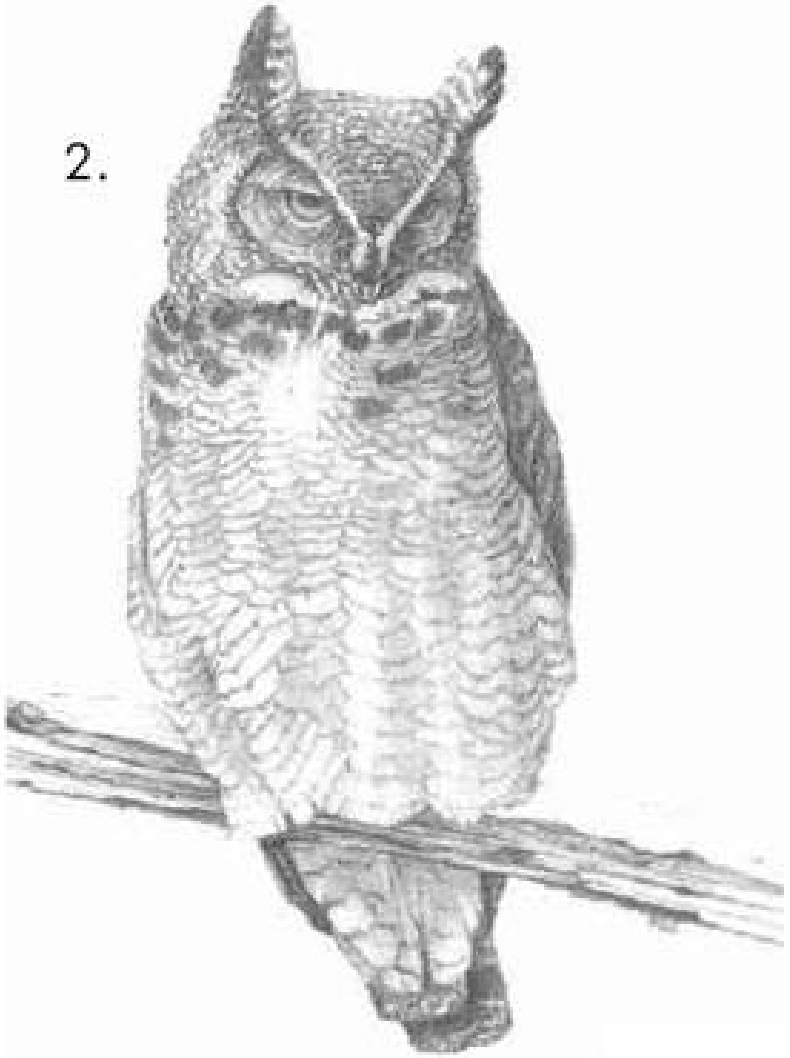
Just pick a project

How to draw an owl

1.

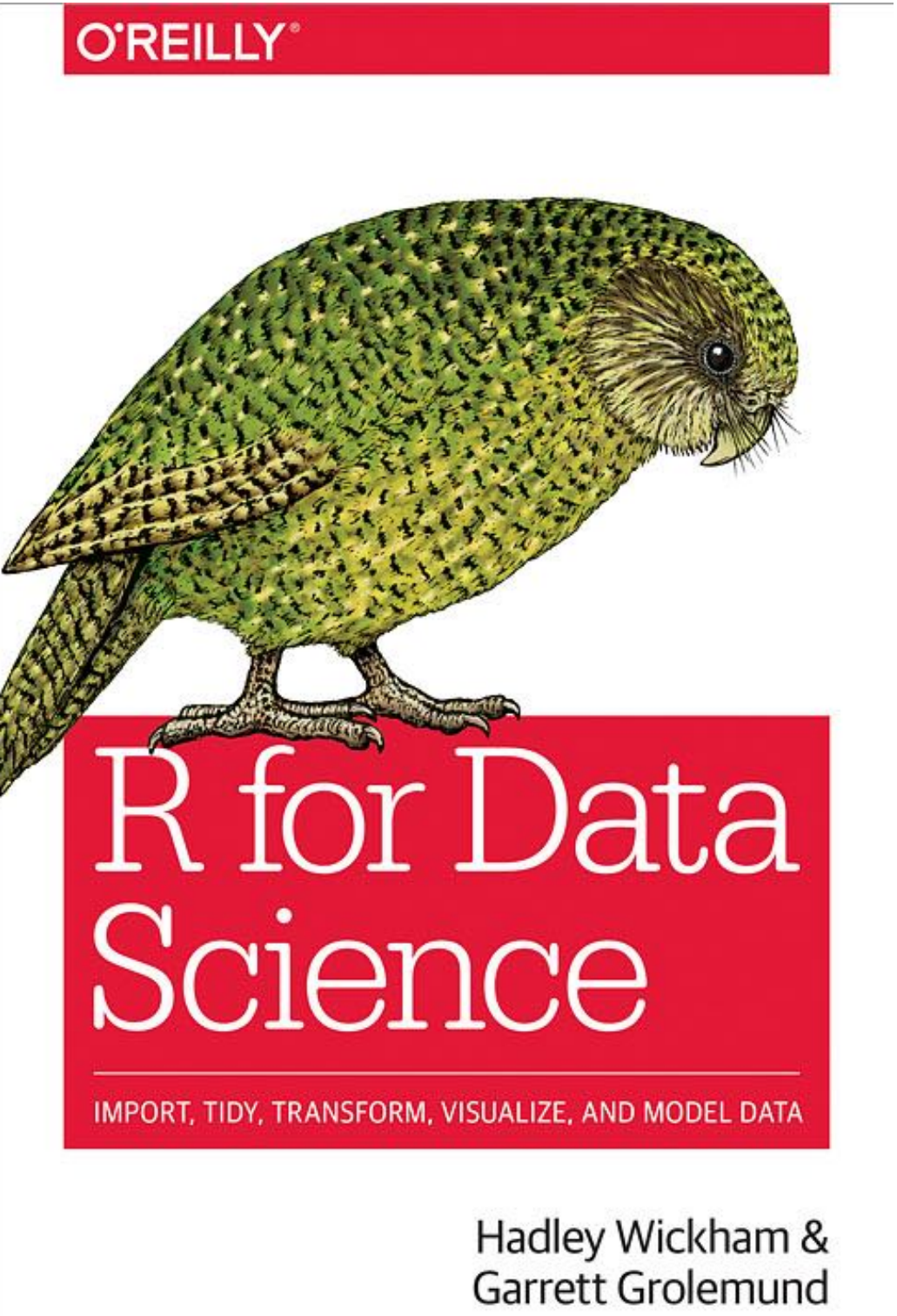
1. Draw some circles

2.

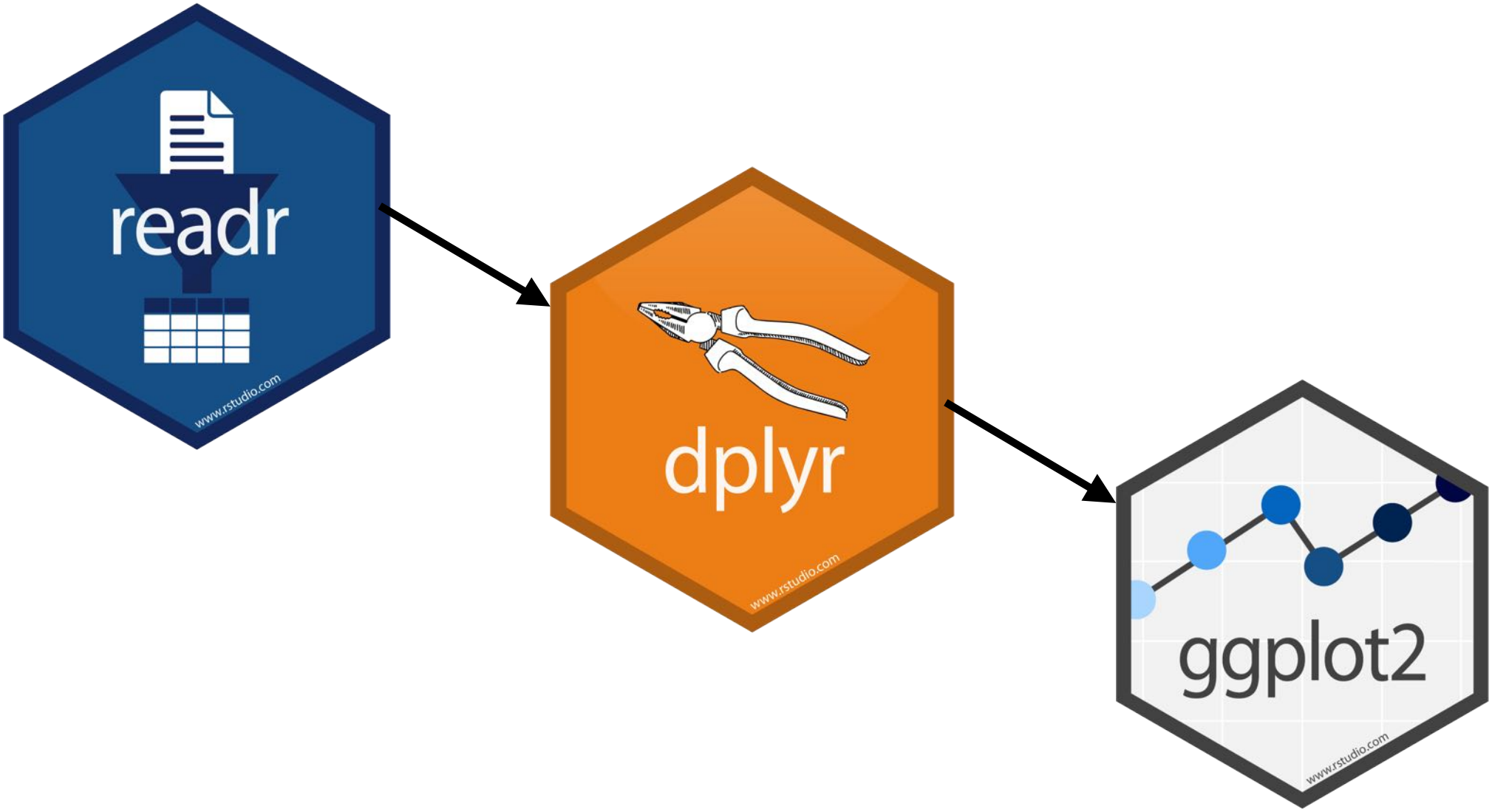


2. Draw the rest of the fucking owl

6,000 letters sent to Daniel van der Meulen between 1578 and 1600

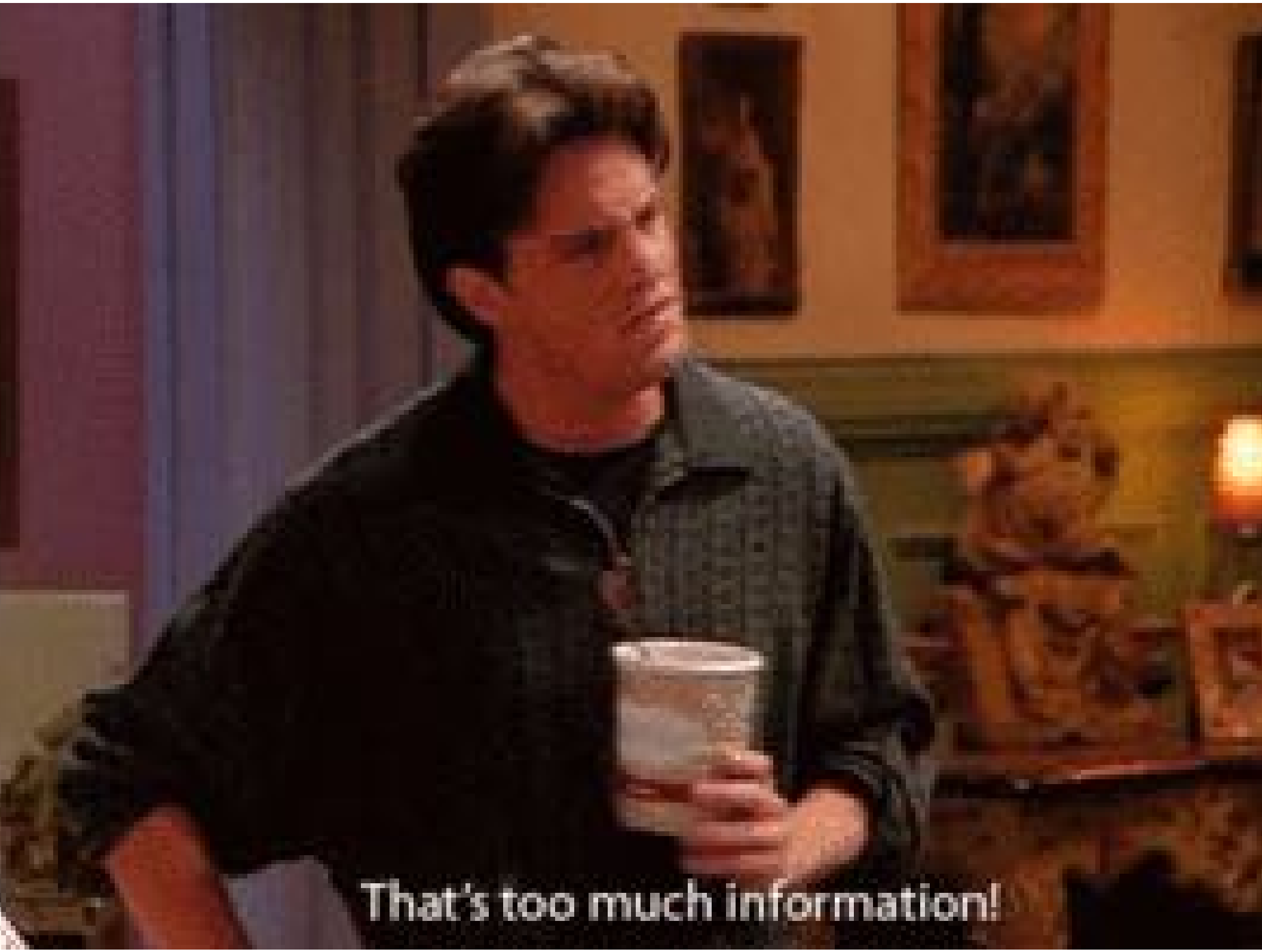


Garrett Grolemund
and
Hadley Wickham's
R for Data Science


readr
www.rstudio.com
dplyr
www.rstudio.com
ggplot2
www.rstudio.com

Available CRAN Packages By Date of Publication

Date	Package	Title
2019-01-18	cumSeg	Change Point Detection in Genomic Sequences
2019-01-18	demography	Forecasting Mortality, Fertility, Migration and Population Data
2019-01-18	diffobj	Diffs for R Objects
2019-01-18	forecast	Forecasting Functions for Time Series and Linear Models
2019-01-18	haploR	Query 'HaploReg', 'RegulomeDB', 'LDlink'
2019-01-18	iotables	Importing and Manipulating Symmetric Input-Output Tables
2019-01-18	labelled	Manipulating Labelled Data
2019-01-18	NlcOptim	Solve Nonlinear Optimization with Nonlinear Constraints
2019-01-18	OpenMx	Extended Structural Equation Modelling
2019-01-18	palettesForR	GPL Palettes Copied from 'Gimp' and 'Inkscape'
2019-01-18	ParamHelpers	Helpers for Parameters in Black-Box Optimization, Tuning and Machine Learning
2019-01-18	QCA	Qualitative Comparative Analysis
2019-01-18	RKEEL	Using KEEL in R Code
2019-01-18	Rmosek	The R to MOSEK Optimization Interface


That's too much information!


library(tidyverse)

Jesse Sadler

A blog about early modern history and digital humanities

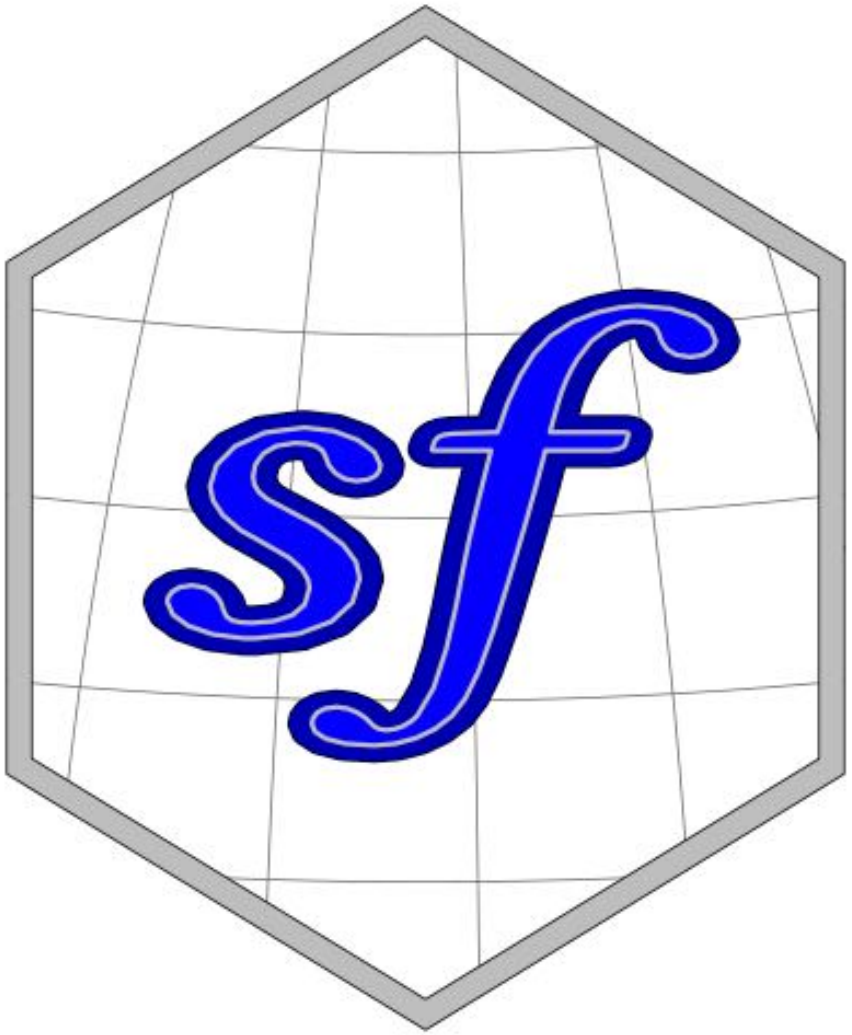
Introducing debkeepr

An R package for the analysis of non-decimal currencies

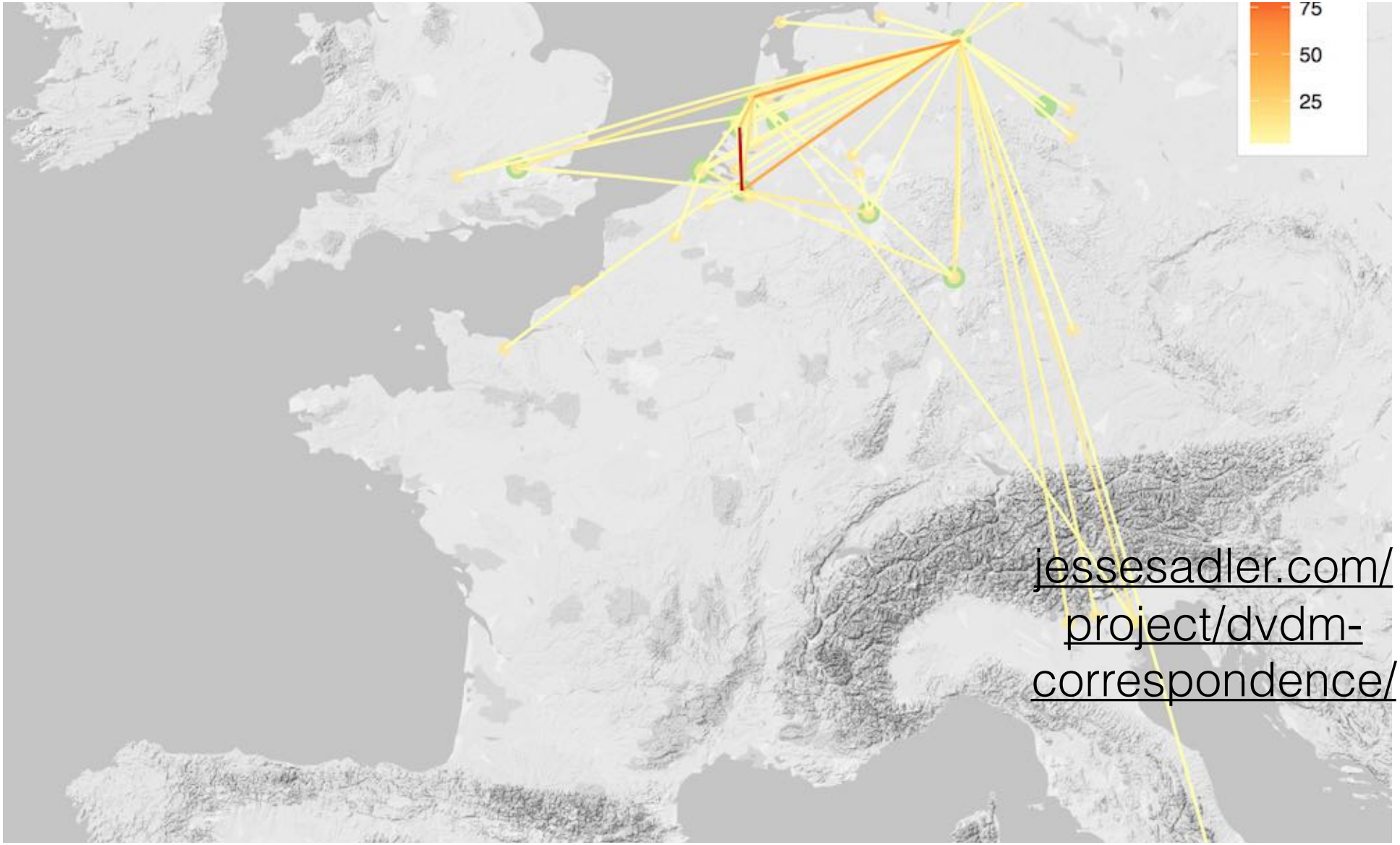
Posted on September 18, 2018

After an extensive period of iteration and a long but rewarding process of learning about package development, I am pleased to announce the release of my first R package. The package is called debkeepr, and it derives directly from my historical research on early modern merchants. `debkeepr` provides an interface for working with non-decimal currencies that use the tripartite system of pounds, shillings, and pence that was used throughout Europe in the medieval and early modern periods. The package includes functions to apply arithmetic and financial operations to single or multiple values and to analyze account books that use double-entry bookkeeping with the latter providing the basis for the name of `debkeepr`. In a later post I plan to write about the package development process, but here I want to discuss the motivation behind the creation of the package and provide some

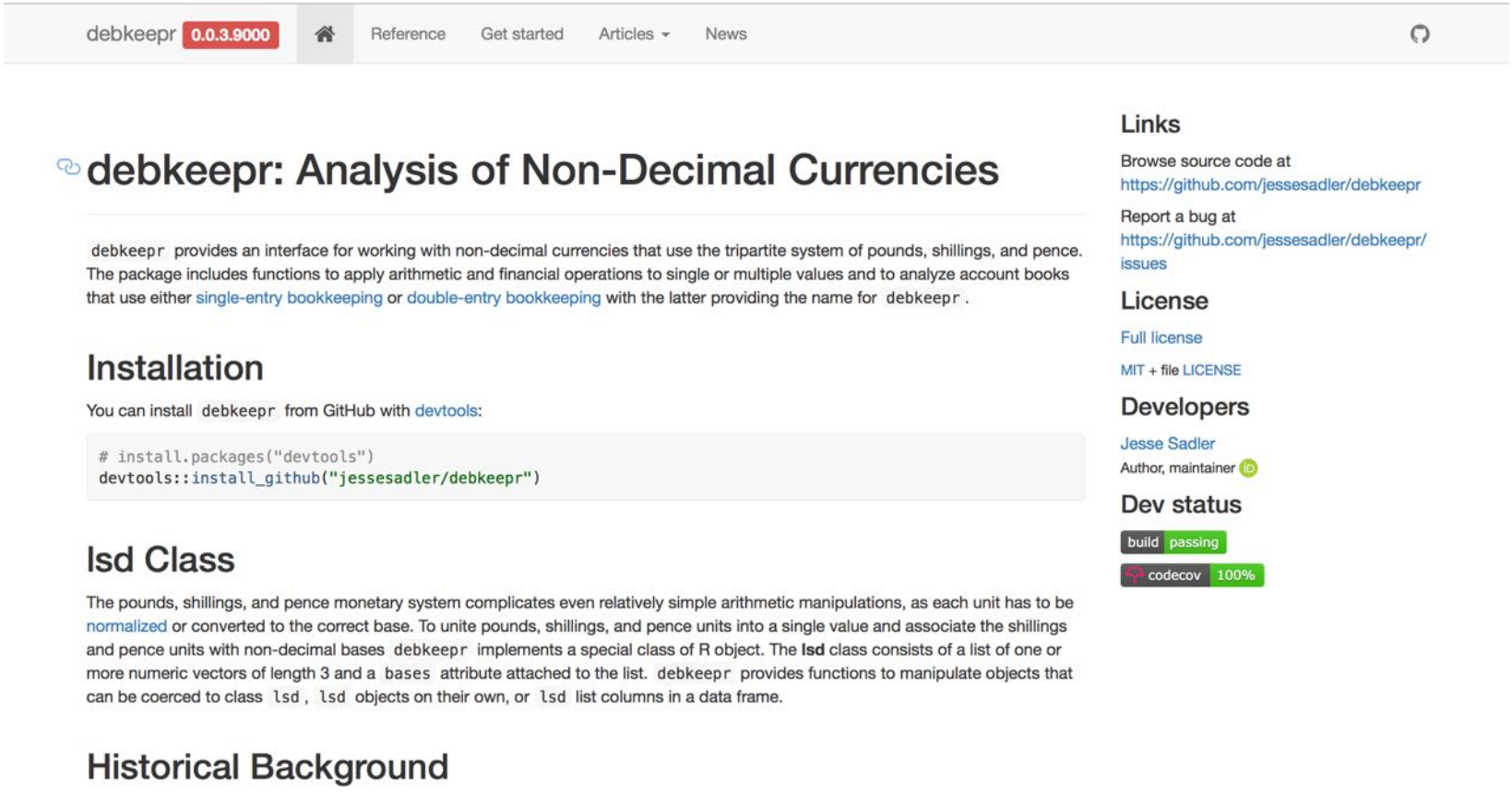
Historical GIS with R



Letters received by Daniel van der Meulen, 1578–1591

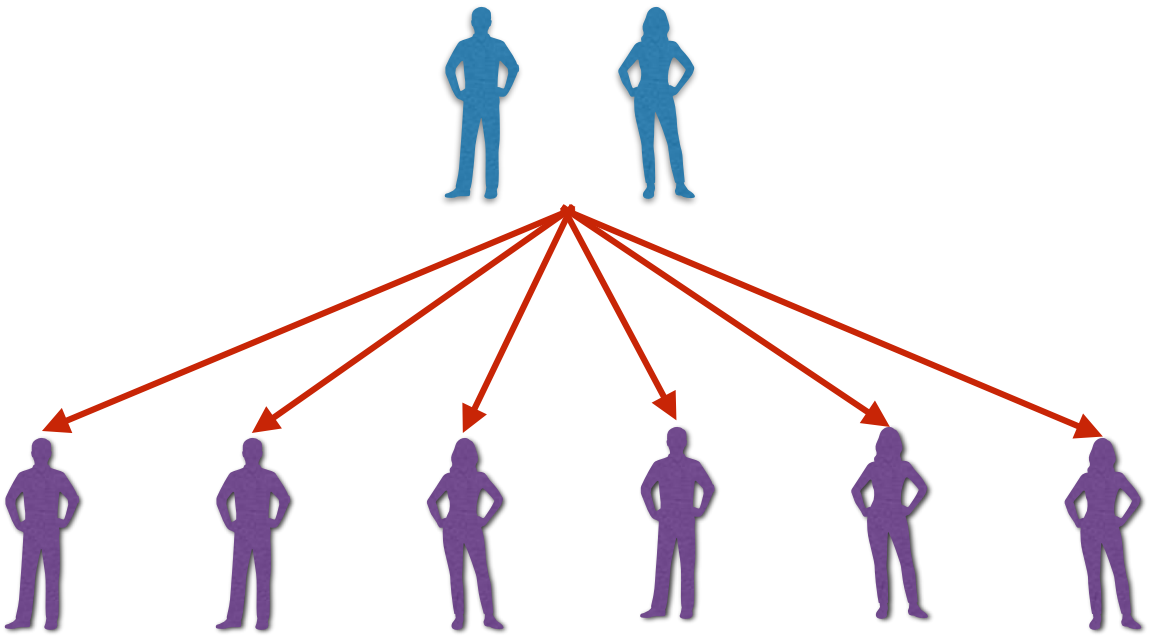


debkeepr:
Analysis of non-decimal currencies



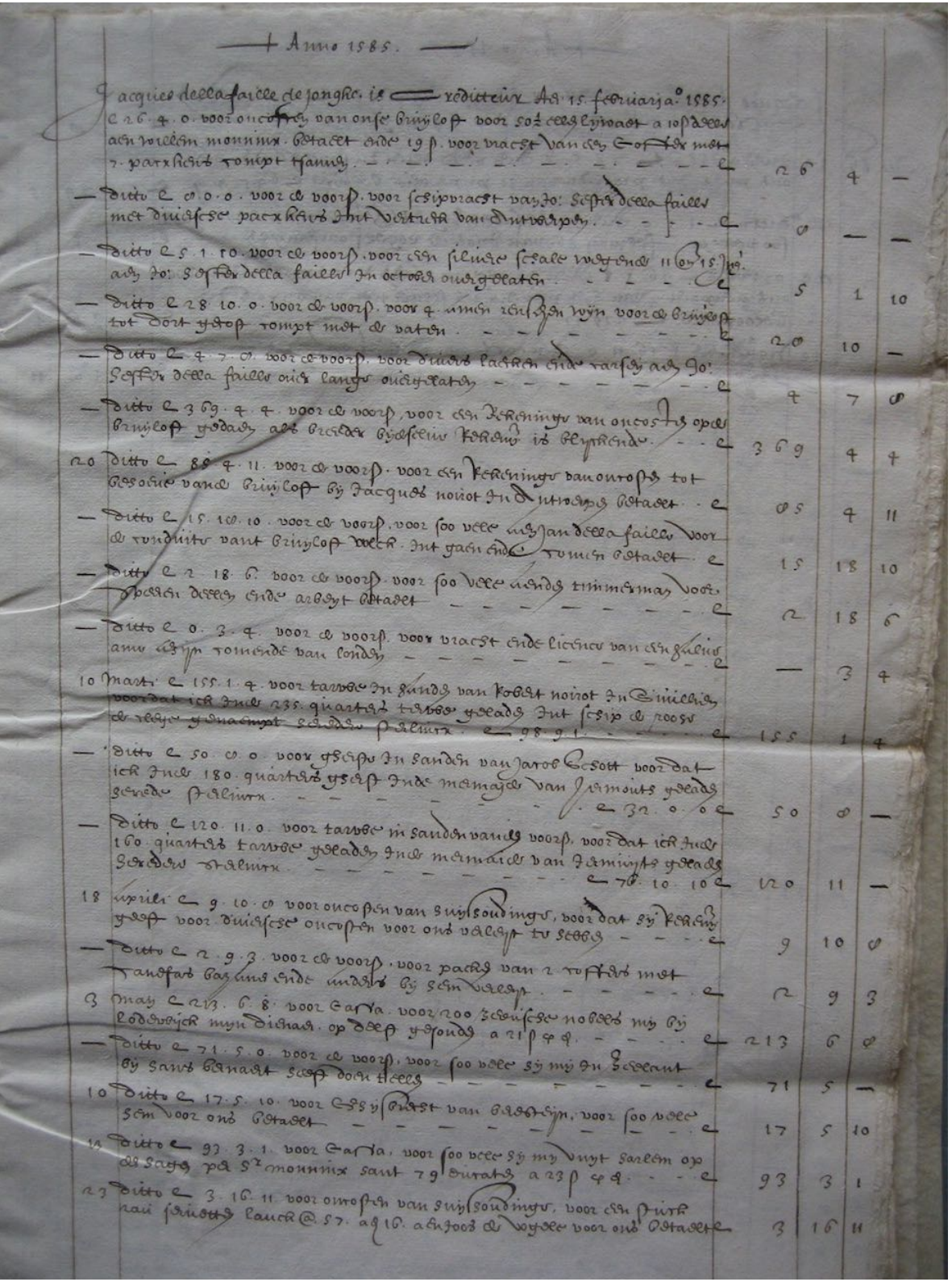
jessesadler.github.io/debkeepr

Partible Inheritance



Anno 1585.

Jacques della faille de jonghe. is —— crediteur Adi 15 februarij a° 1585. £ 26. 4. 0. voor oncosten van onse Bruijloft voor 50½ ellen ghewaet a 10 s d'eel aen willem monninx betaelt ende 19 s. voor vracht van den coffer met 7. parkeelen compt t'samen. — . — . — . — . — . — — £	26	4	—
— ditto £ 8. 0. 0. voor de voorss. voor schipvracht van Jo: Softer della failles met diversche packetten int vertreck van Antwerpen. — — — — £	8	—	—
— ditto £ 5. 1. 10. voor de voorss. voor een silvere schale weghende 11 on 15 ing. aen Jo: Softer della failles in october overghelaten. — — — £	5	1	10
— ditto £ 28. 10. 0. voor de voorss. voor 4. ammen rensschen wijn voor de Bruijloft tot Dort ghecoft compt met de vaten. — — — — — — — £	28	10	—
— ditto £ 4. 7. 8. voor de voorss. voor diversche lacken ende varsen aen Jo: Softer della failles over lange overghelaten — — — — — — £	4	7	8
— ditto £ 369. 4. 4. voor de voorss. voor een rekeninge van oncosten op de Bruijloft ghedaen als breeder bij selue rekeninghe is blijckende. — — £	369	4	4
20 ditto £ 85. 4. 11. voor de voorss. voor een rekeninge van oncosten tot behoeve vande Bruijloft bij Jacques noirot in Antwerpen betaelt. . £	85	4	11
— ditto £ 15. 18. 10. voor de voorss. voor soo vele mijn Jan della faille voor de conduite vant Bruijloft volck int gaen ende comen betaelt. £	15	18	10
— ditto £ 2. 18. 6. voor de voorss. voor soo vele aende timmerman voor sparren deelen ende arbeyt betaelt — — — — — — — — £	2	18	6
— ditto £ 0. 3. 4. voor de voorss. voor vracht ende licentie van een ghelas aen ... comende van londen — — — — — — — — — £	—	3	4
10 marti £ 155. 1. 4. voor tarwe in handen van Robert noirot in Gravelinghen voordat ick hem 235. quartaels tarwe gheladen int schip de roose de reyse ghenaempt schipper ... £ 98. 9. ... £	155		



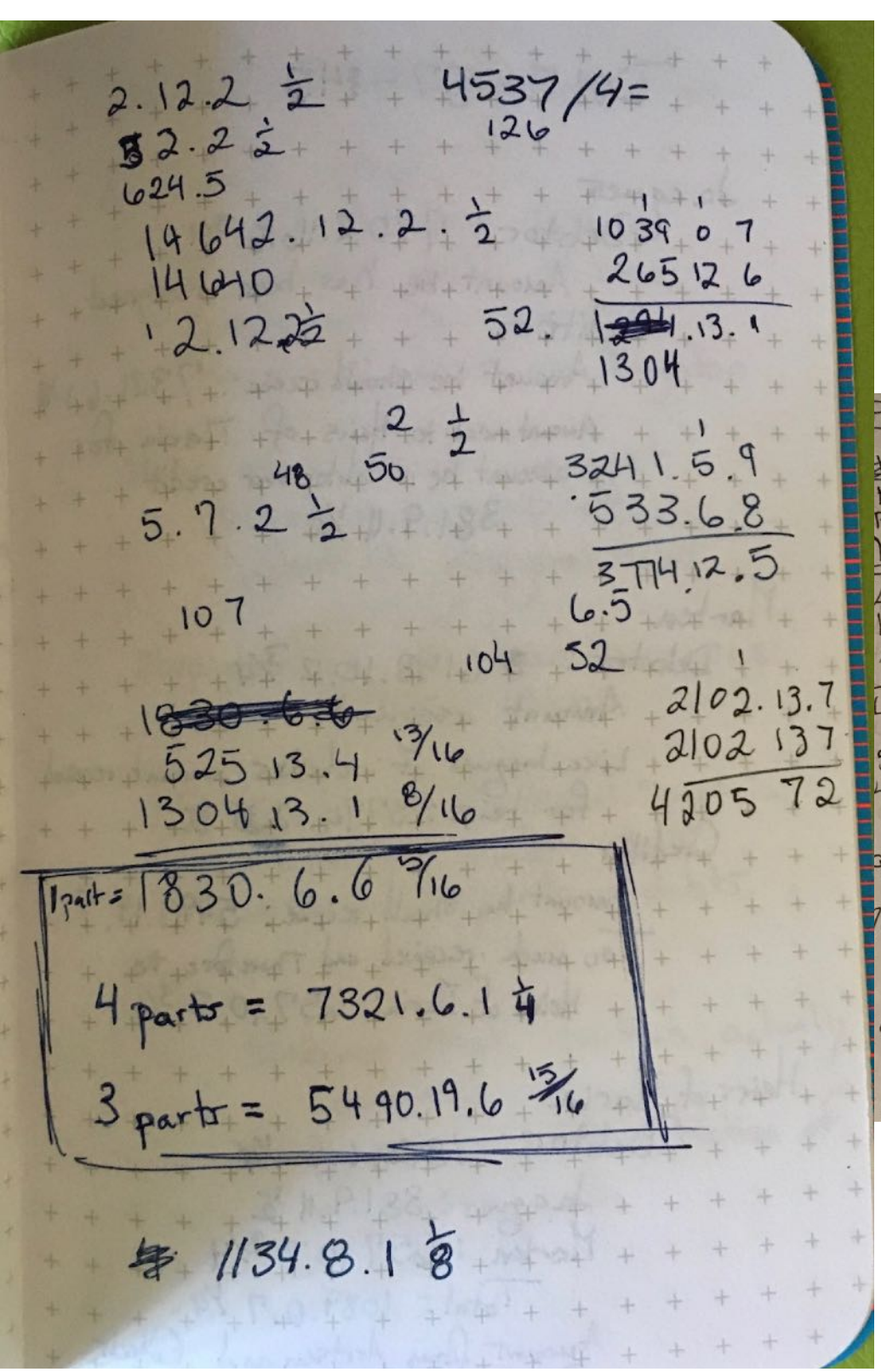
Non-decimal currency

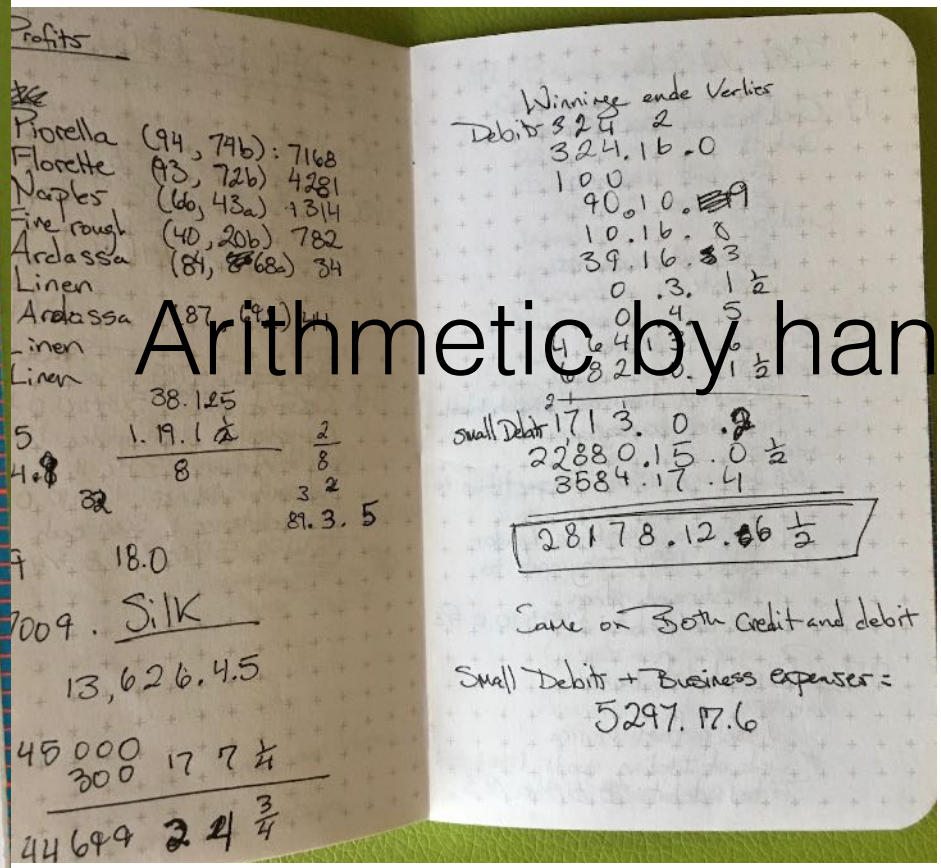
1 pound = 20 shillings

1 shilling = 12 pence

Problems

- Arithmetic calculations are cumbersome





Arithmetic by hand

Problems

- Arithmetic calculations are cumbersome
- How to deal with tripartite non-decimal values in a data base

Problems in R

- Three separate units make up one value
- The units have non-decimal bases
- The bases may be different when a value is transferred to another currency

lsd

libra solidus denarius

(pound) (shilling) (penny)

lsd class

- £10 18s. 4d. = `c(10, 18, 4)`
- bases attribute: `c(20, 12)`
- lsd objects are stored as lists

lsd class

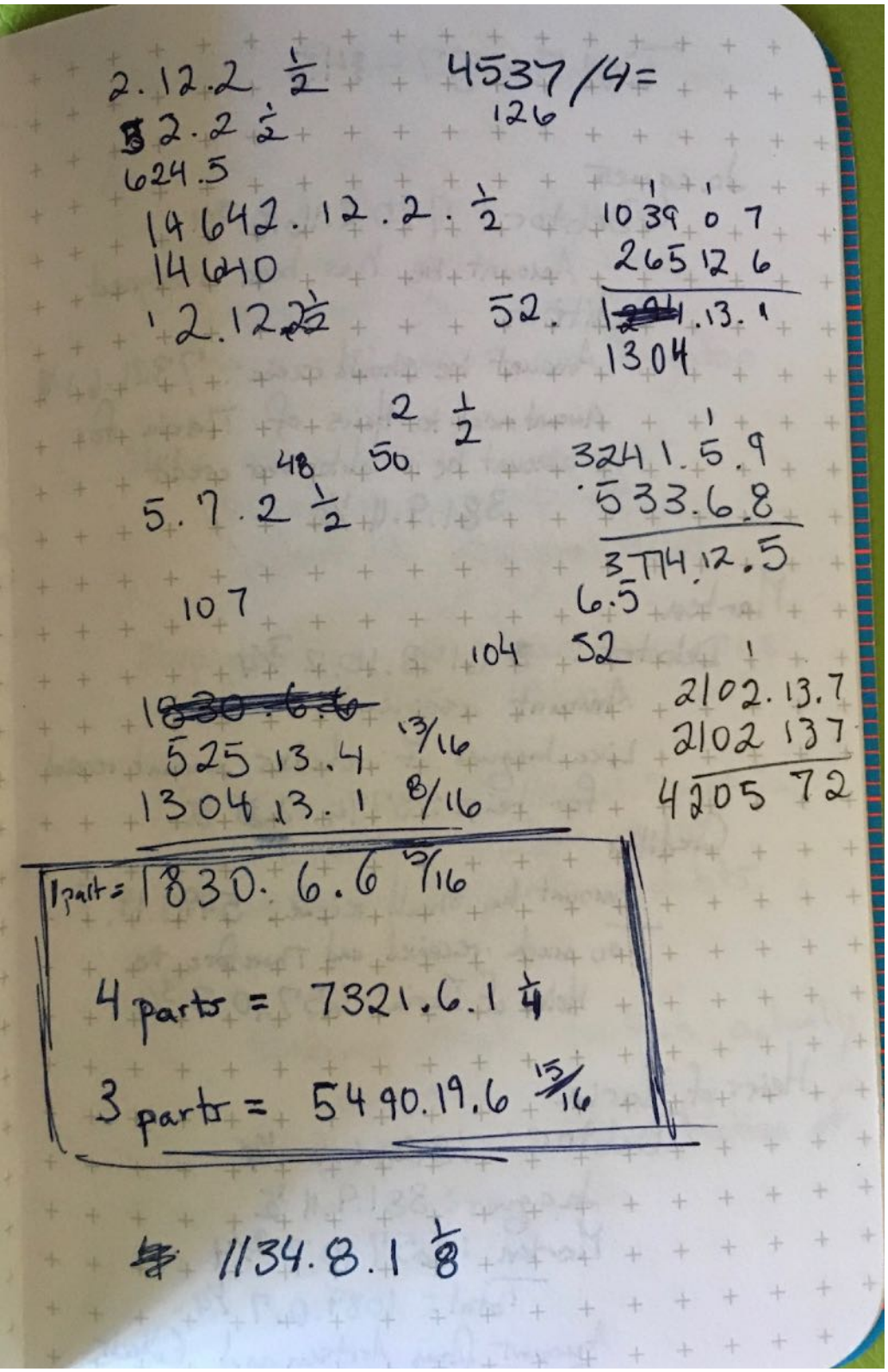
```
> deb_as_lsd(lsd = c(10, 18, 4),
                bases = c(20, 12))

##       l  s d
## [1] 10 18 4
```

Input as three variables

```
> transactions

# A tibble: 2,155 x 6

   credit debit date           l     s     d

    <dbl> <dbl> <date>     <dbl> <dbl> <dbl>

 1      1     3 1582-11-08     0     0     1

 2      1     4 1582-11-08     0     0     1

 3      1     5 1582-11-08     0     0     1

 4      1     6 1582-11-08    17    17     6

 5      1     7 1582-11-08    10     4     0

 6      1     8 1582-11-08     0    15     2

 7      1     9 1582-11-08    16     4    10
```

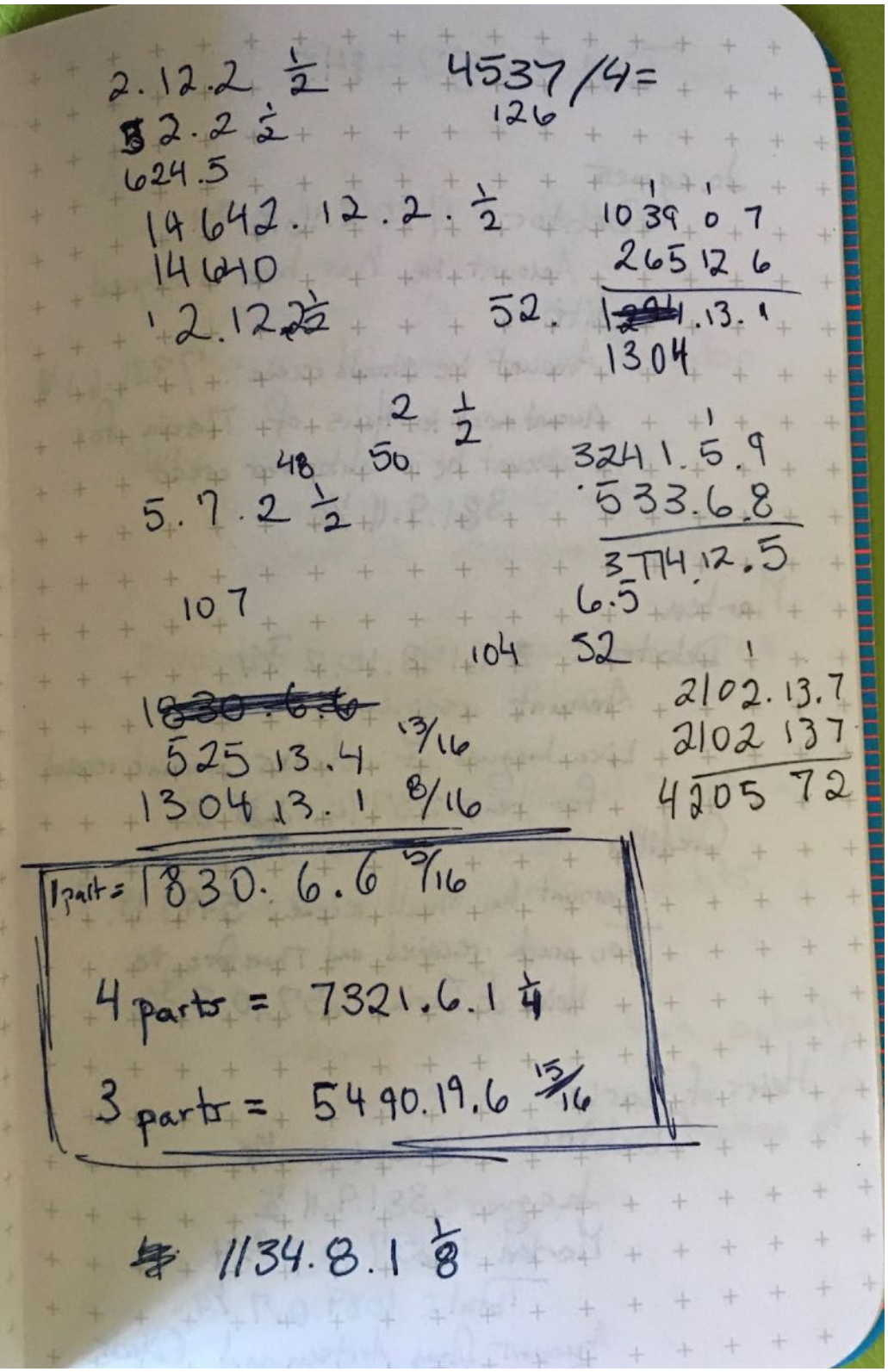
lsd list column

```
> deb_lsd_gather(transactions, replace = TRUE)

# A tibble: 2,155 x 4

   credit debit date       lsd

    <dbl> <dbl> <date>     <S3: lsd>

 1      1     3 1582-11-08 0, 0, 1

 2      1     4 1582-11-08 0, 0, 1

 3      1     5 1582-11-08 0, 0, 1

 4      1     6 1582-11-08 17, 17, 6

 5      1     7 1582-11-08 10, 4, 0

 6      1     8 1582-11-08 0, 15, 2

 7      1     9 1582-11-08 16, 4, 10

 8      1    10 1582-11-08 11, 5, 0
```



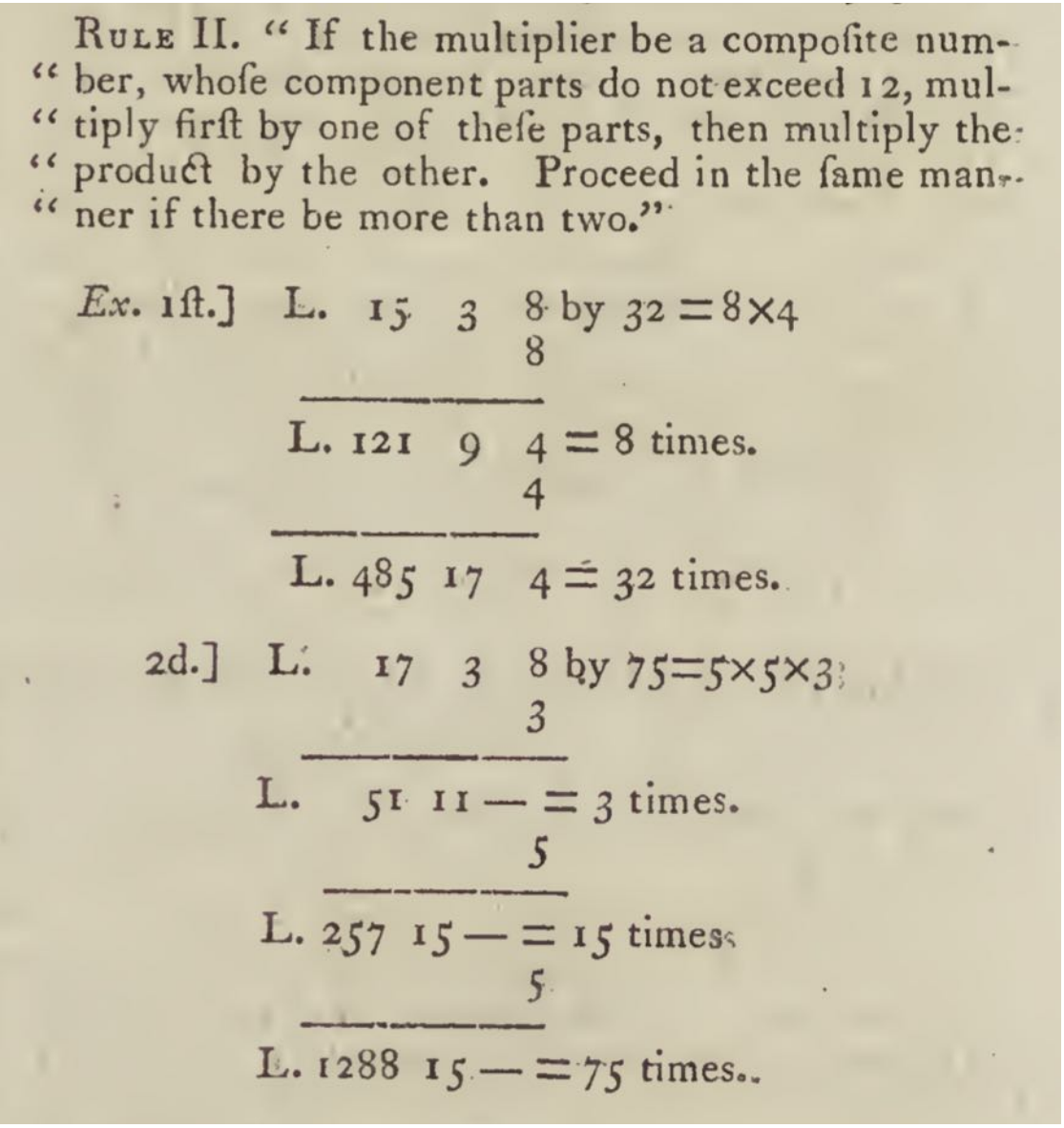
Normalization

```
> deb_normalize(c(21,
48, 28))

##       l  s d
## [1] 23 10 4
```



Addition

```
> deb_sum(c(10, 14, 8),
          c(5, 18, 11),
          c(6, 16, 9))

##       l  s d
## [1] 23 10 4
```



RULE II. "If the multiplier be a compoſite number, whoſe component parts do not exceed 12, multiply firſt by one of theſe parts, then multiply the product by the other. Proceed in the ſame manner if there be more than two."

Ex. 1ſt.] L. 15 3 8 by 32 = 8×4
8
L. 121 9 4 = 8 times.
4
L. 485 17 4 = 32 times.

2d.] L. 17 3 8 by 75=5×5×3
3
L. 51 11 — = 3 times.
5
L. 257 15 — = 15 times.
5
L. 1288 15 — = 75 times.

Multiplication

```
# Multiply £15 3s. 8d.
sterling by 32

> deb_multiply(c(15, 3, 8),
                 x = 32)

##         l  s d
## [1] 485 17 4
```

RULE I. "When the dividend only consists of "different denominations, divide the higher denomination, and reduce the remainder to the next "lower, taking in (p. 296. Rule V.) the given number of that denomination, and continue the division."

Examples.

Divide L.465 : 12 : 8 by 72.

	L.	*s.*	*d.*	*L.*	*s.*	*d.*
72)	465	12	8	(6	9	4
	432	· ·	·			
	33					
	20					
72)	672					
	648					
	24					
	12					
72)	296					
	288					
	8 Rem.					

Or we might divide by the component parts of 72, (as explained under *Thirdly*, p. 298).

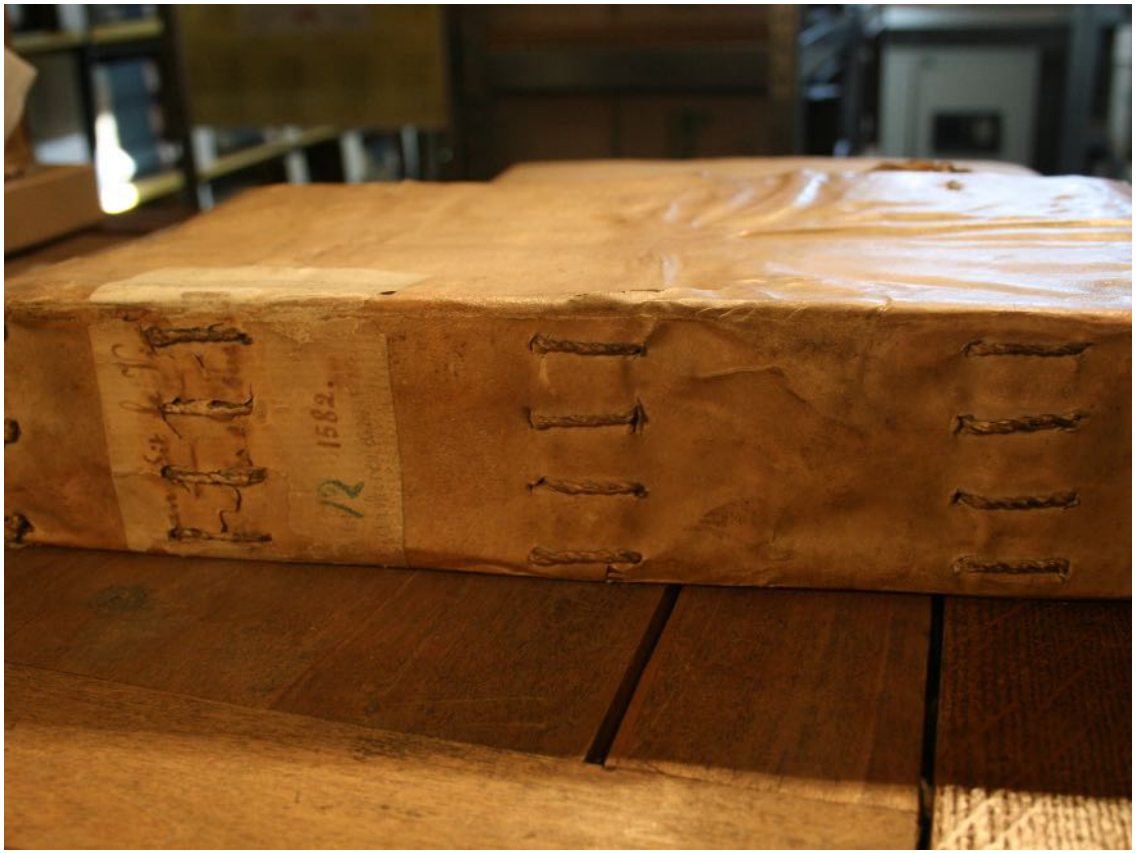
Divide 345 cwt. 1 q. 8 lb. by 22.

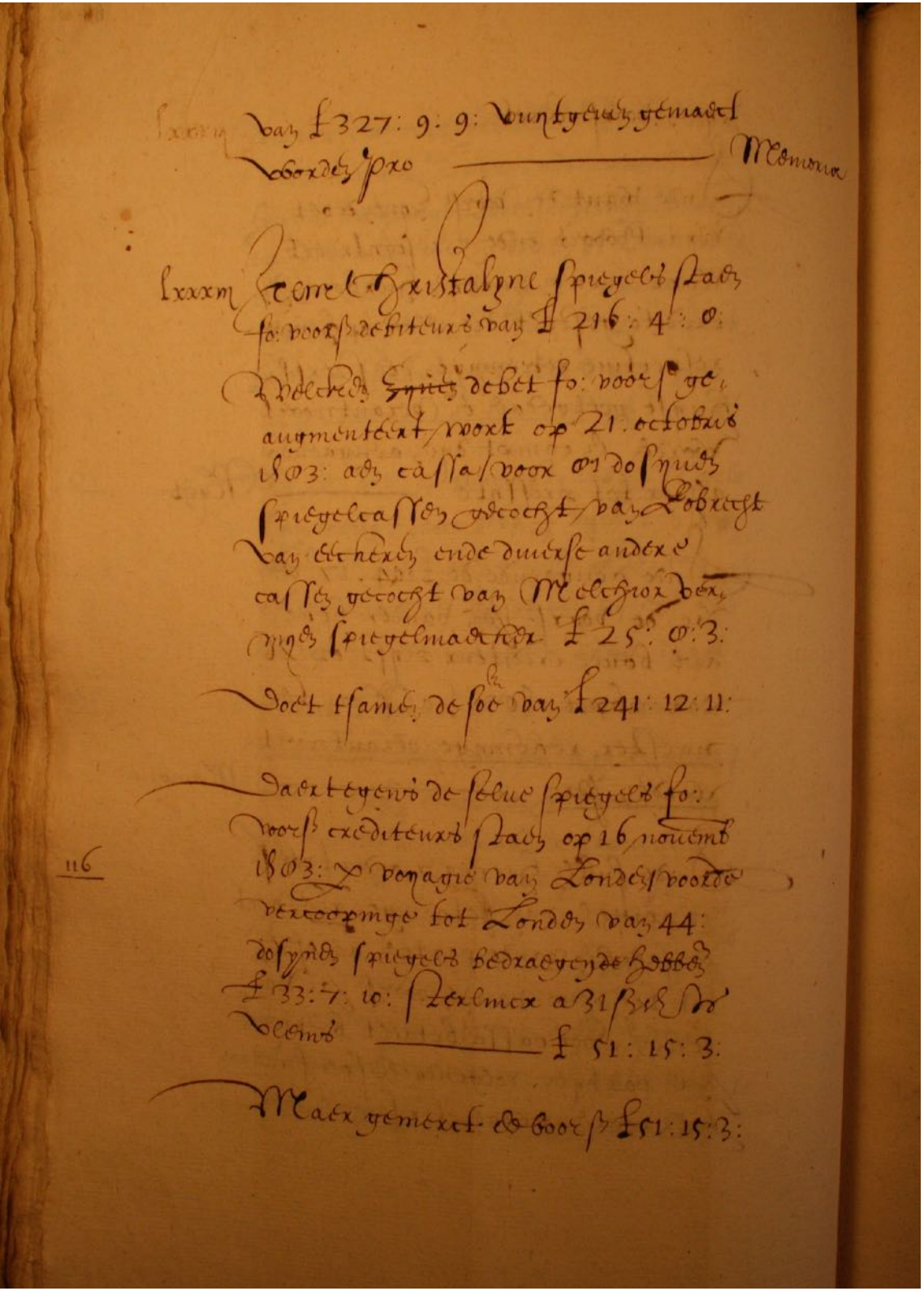
	Cwt.	*q.*	*lb.*	*Cwt.*	*q.*	*lb.*
22)	345	1	8	(15	2	21
	22 ·	·	·			
	125					
	110					
	15					
	4					
22)	61					
	44					
	17					
	28					
	144					
	34					
22)	484					
	44					
	44					
	44					
	0					

Division

```
# Divide 345cwt. 1q. 8lbs.
by 22

> deb_divide(c(345, 1, 8),
                x = 22,
                bases = c(4, 28))

##       l s  d
## [1] 15 2 22
```

Jan della Faille de Oude, (c. 1515–1582)



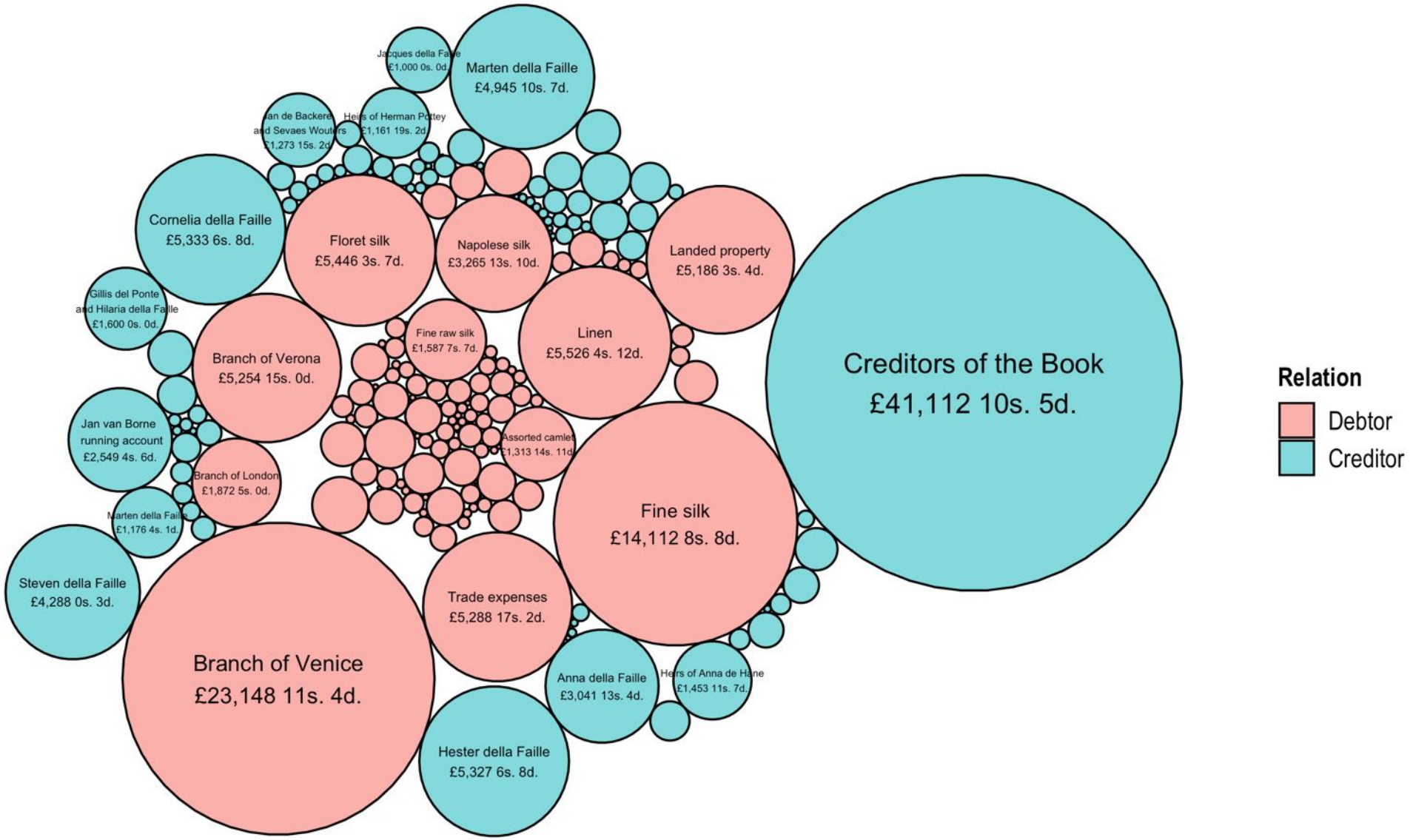


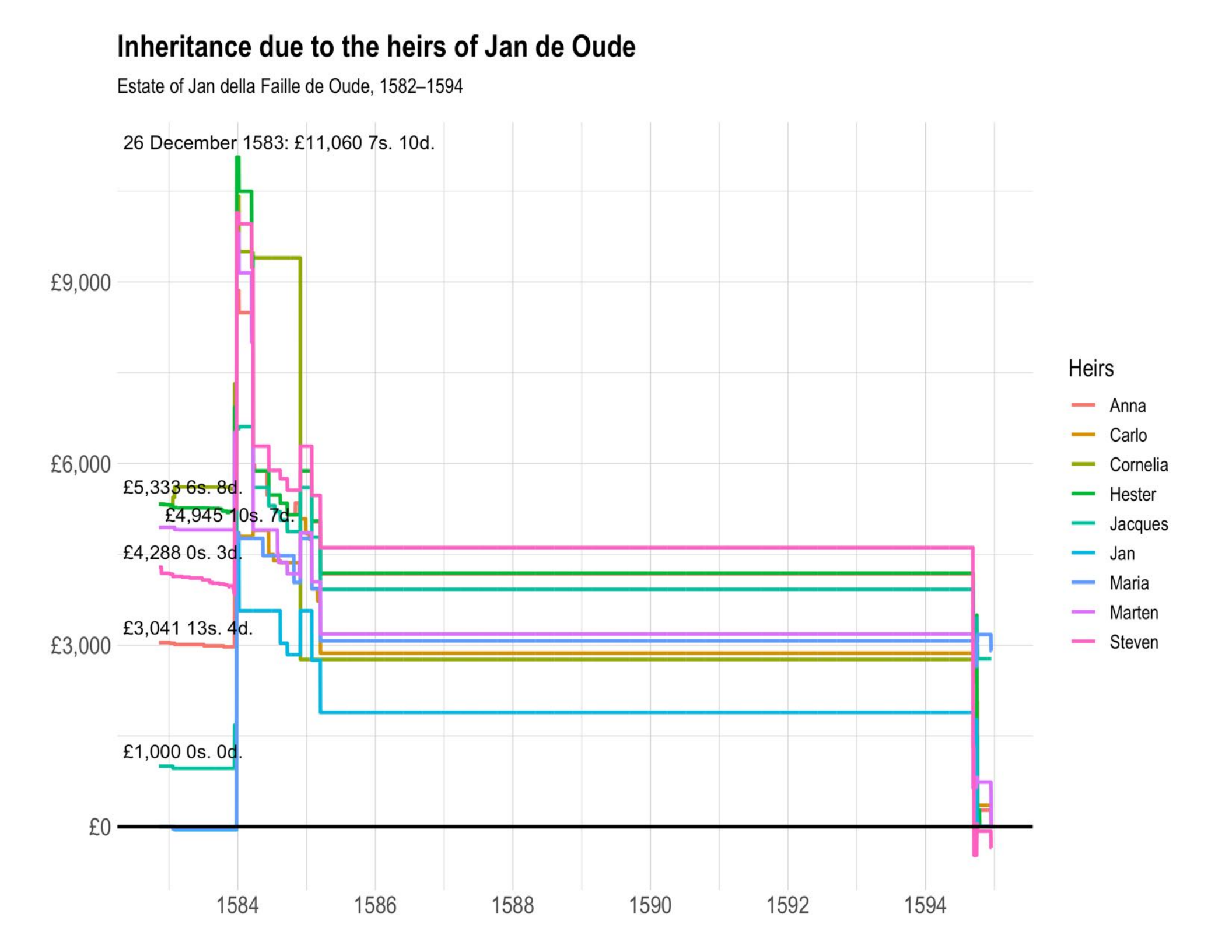
Accounts of the estate of Jan della Faille de Oude

- Date: 8 November 1582 to 31 December 1594
- 2,155 transactions
- 480 accounts

Value of accounts in the estate of Jan della Faille de Oude, 8 December 1582

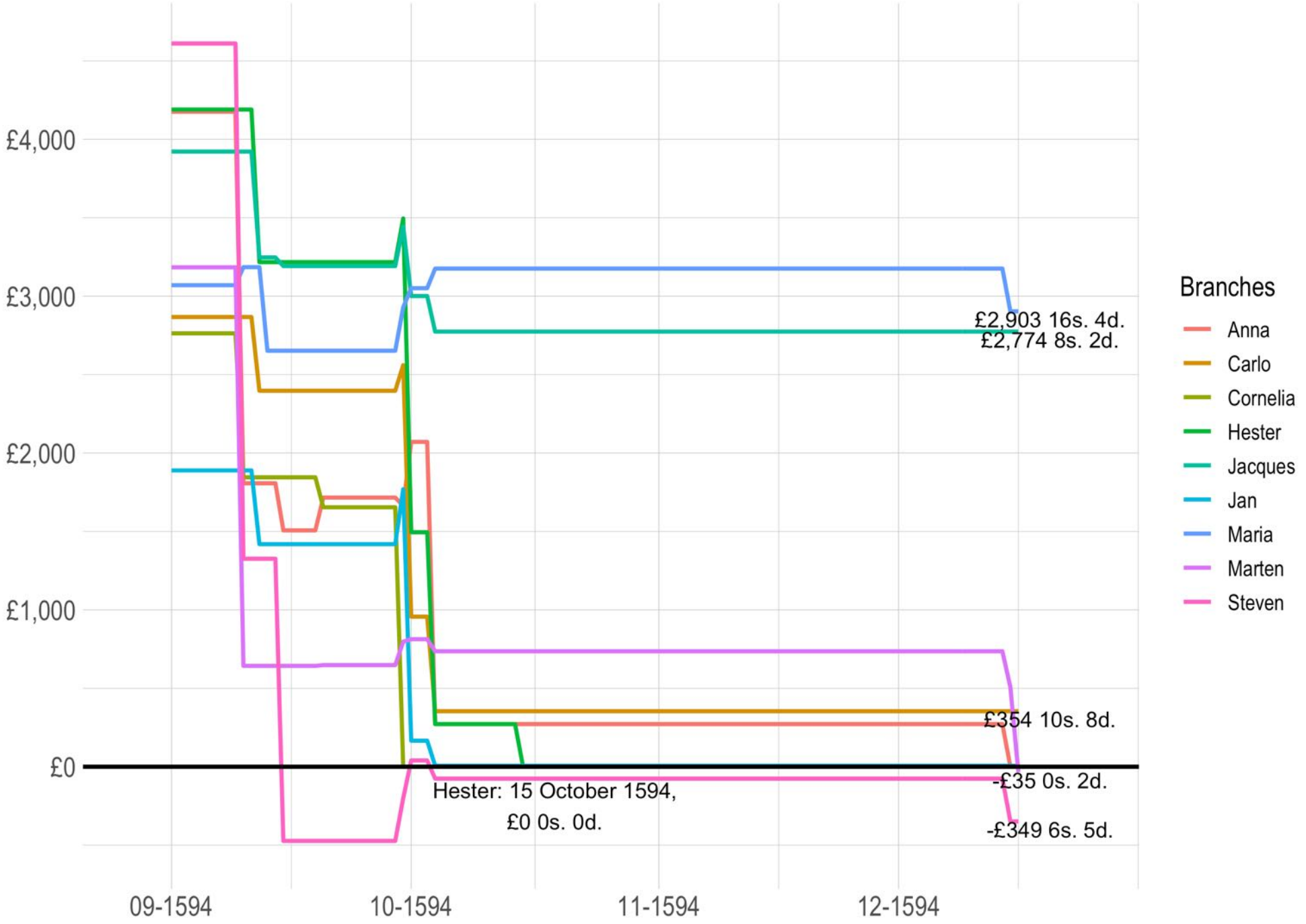
Opening value of the estate: £82,813 5s. 8d.



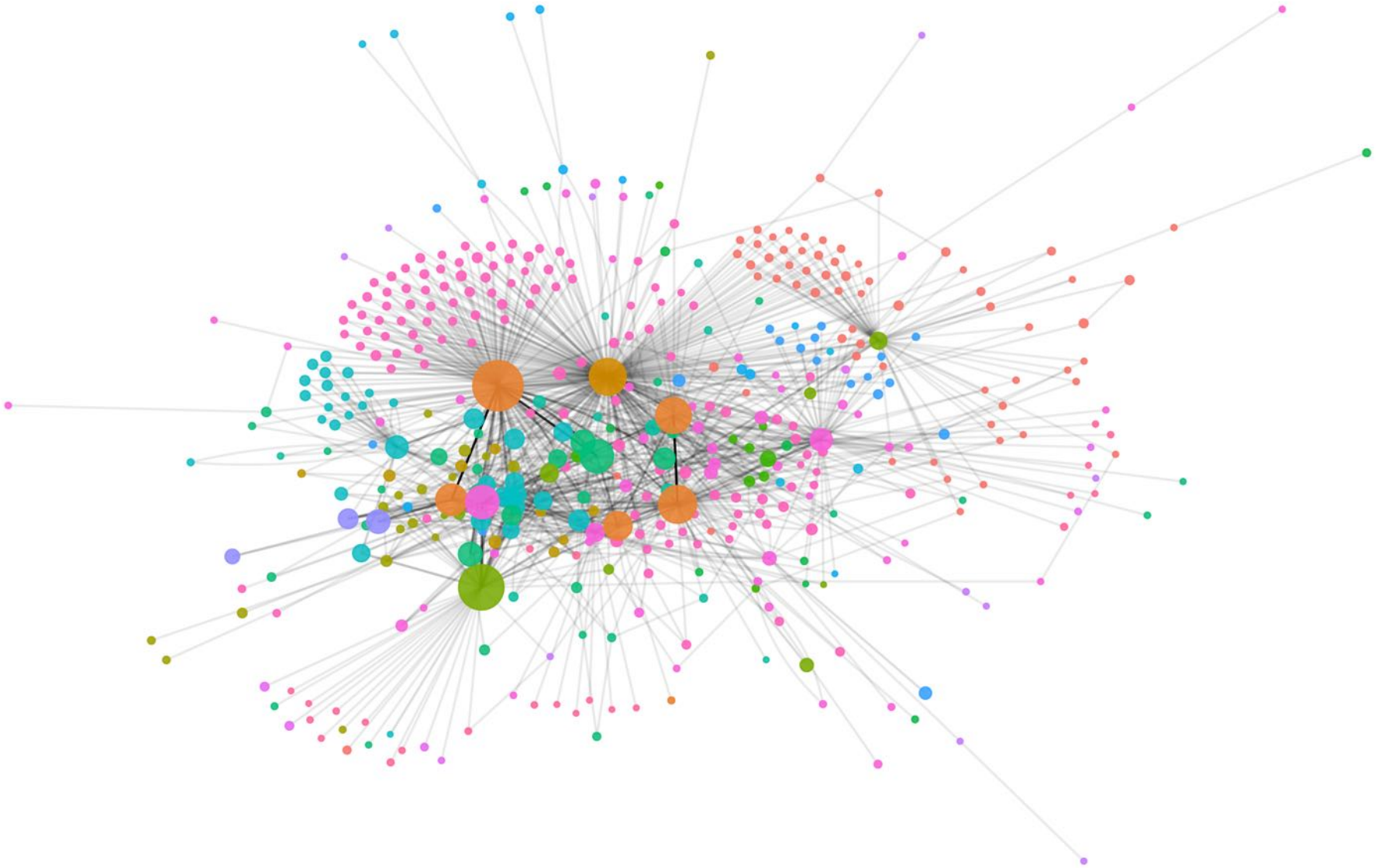

Inheritance due to the heirs of Jan de Oude
Estate of Jan della Faille de Oude, 1582–1594
26 December 1583: £11,060 7s. 10d.
£9,000
£6,000
£3,000
£0
£5,333 6s. 8d.
£4,945 10s. 7d.
£4,288 0s. 3d.
£3,041 13s. 4d.
£1,000 0s. 0d.
1584
1586
1588
1590
1592
1594
Heirs
Anna
Carlo
Cornelia
Hester
Jacques
Jan
Maria
Marten
Steven

Inheritance due to the heirs of Jan de Oude

September 1594 to 16 December 1594



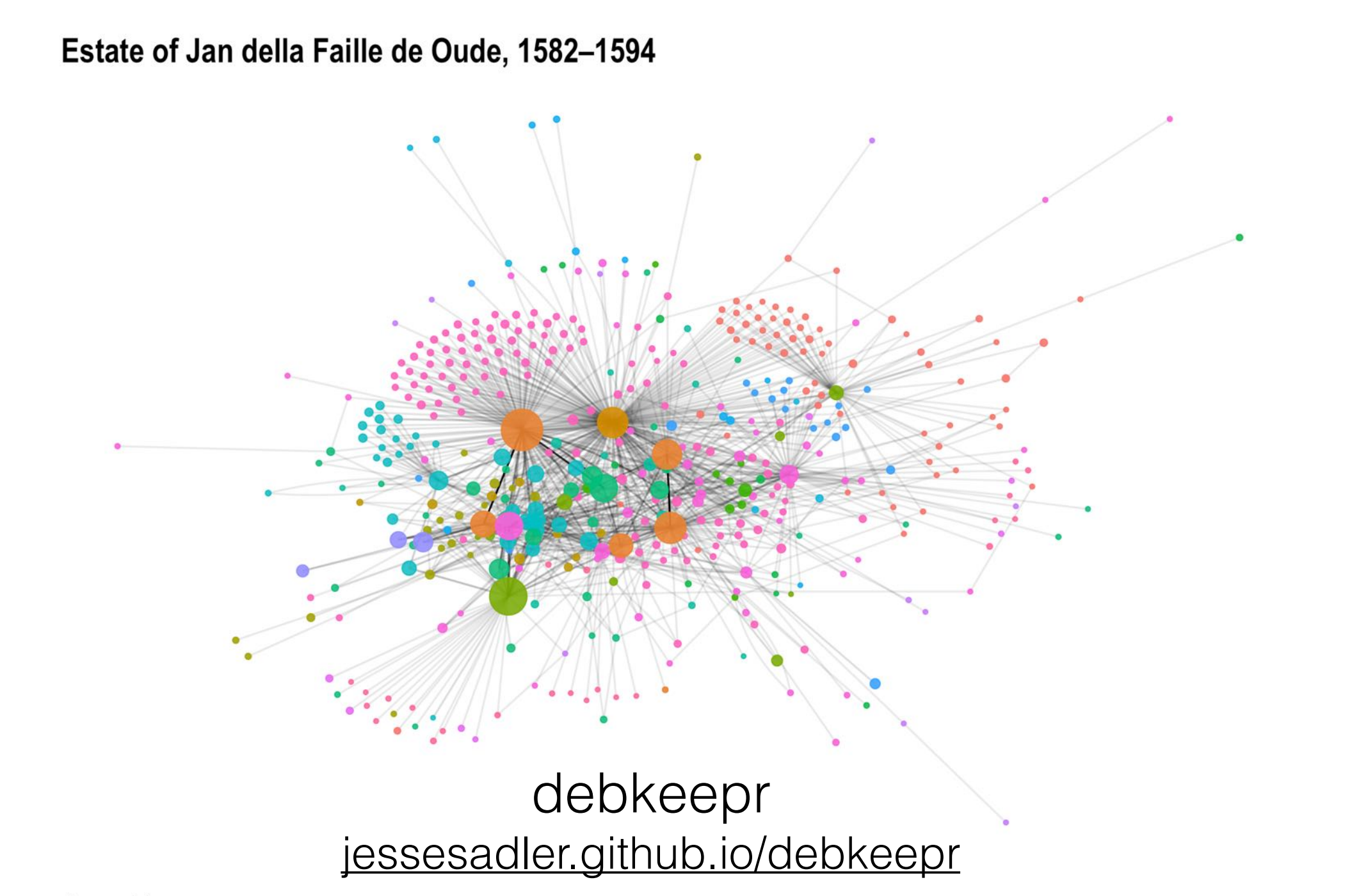
Estate of Jan della Faille de Oude, 1582–1594



Account types

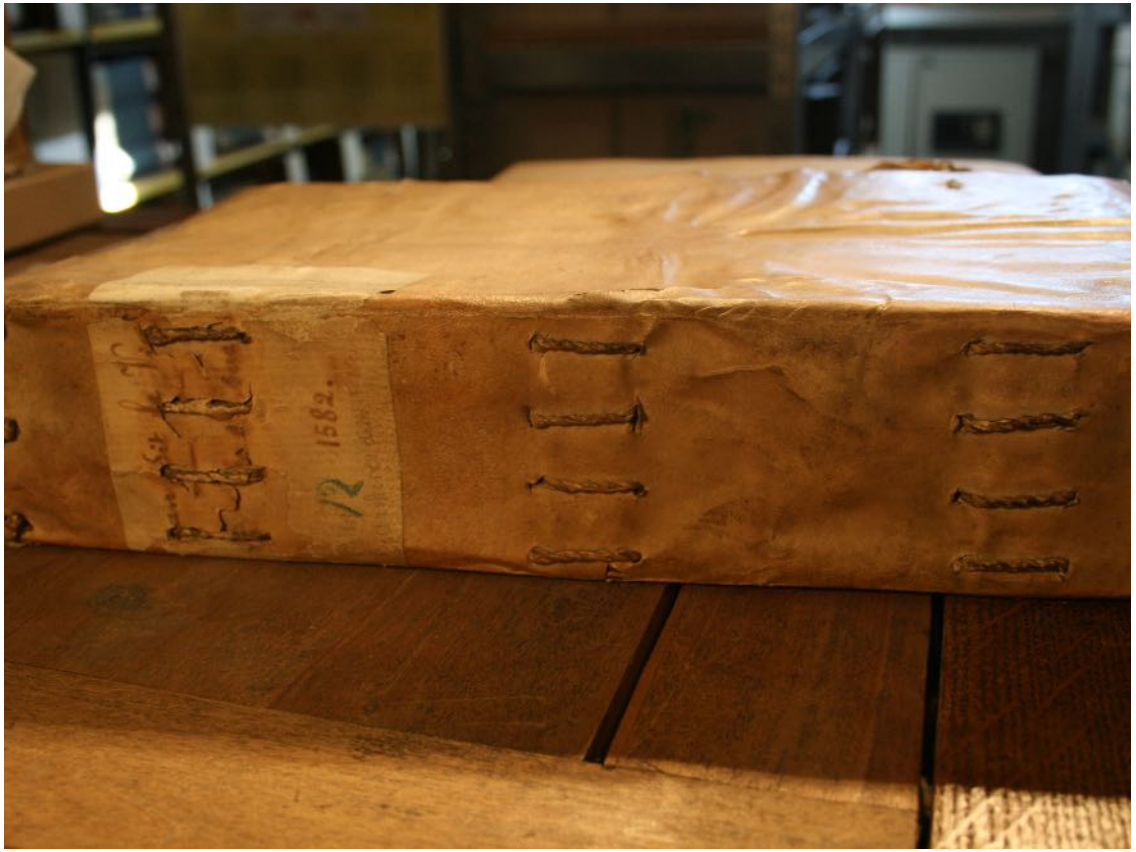
Bequest · Branch · Cassa · Company · Erffgoed · Estate · Factor · Giovane · Goods · Heir

Inheritance · Kin · Law · Loan · London Inheritance · Miscellaneous · Political · Trade · Wissel · Written off



debkeepr

jessesadler.github.io/debkeepr



Thank you

Jesse Sadler

@vivalosburros
jessesadler.com
github.com/jessesadler