

On Grundtvig and his use of bible references

Musings of a software developer

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ABSTRACT

Grundtvig's collected works (GV) in TEI contains markup for references to the Bible. The philologists at the Grundtvig centre has identified 11499 bible references in the GV. They refer to 4637 locations, which means that Grundtvig referred to each location 2.5 times on the average.

A majority of his references are only used once or twice, I assume they are used for some specific purpose. Then there are some five to ten references (favourites) that he use repeatedly through his career. There are two different sets of favourites for prose and verse.

Finally, when I compare Grundtvig's bible references through the years, using a cluster analyses, it turns out that the algorithm chooses two years 1826 and 1839 as focal points for, respectively, prose and verse.

Introduction

Nikolaj Frederik Severin Grundtvig (1783-1872) is one of the most influential persons in Danish 19th century history. A polymath and very prolific writer and "a pastor, author, poet, philosopher, historian, teacher and politician", as [Wikipedia \(2003\)](#) describes him. In this paper I present some data analyses on his use of the bible in his writing.

Grundtvig's use of bible references in his writings varied a lot over time. I discovered this when testing the bible reference faceted search for the Center for Grundtvigforskning's and Det Kgl. Bibliotek's (2020) [Grundtvigs Værker](#), a part of the Royal Danish Library's Text Collections. It turned out that Grundtvig referred to 1 Corinthians 13:12 "*For now we see in a mirror dimly, but then face to face. Now I know in part; then I shall know fully, even as I have been fully known*"² in more works than any other bible reference, but he did so mostly before 1820. Intrigued by this observation I checked other references and found that he

¹ This work was completed while the author still had not yet retired from his position at the Royal Danish Library.

² https://biblehub.com/1_corinthians/13-12.htm

quoted Genesis 1:27.³ That is, “*So God created man in his own image, in the image of God he created him; male and female he created them*” which occurred mostly from 1855 to 1859.

A bible reference is typically a string such as 1 Corinthians 13:13. There is an ambiguity in the usage, since it denotes both the reference in the source and the text in the scripture, the target, where it refers to “*And now these three remain: faith, hope and love. But the greatest of these is love.*”⁴ I will try to use *bible reference* when discussing the source and use *bible location* when referring to the target; i.e., the scripture.

The complexity of bible references and locations is that they are semantic units, hypertext links and inter-textual objects, all at the same time. As semantic units they are abstract indicator of what a text is about, an indicator of its aboutishness (in Digital Library jargon). They are almost certainly also text adornments, pieces of text jewellery if you like.

Table 1. The six most frequent bible references for verse

Bible location	# usages
Proverbs 20:28 Steadfast love and faithfulness preserve the king, and by steadfast love his throne is upheld.	16
Psalms 23:4 Even though I walk through the valley of the shadow of death, I will fear no evil, for you are with me; your rod and your staff, they comfort me.	17
Proverbs 4:23 Keep your heart with all vigilance, for from it flow the springs of life.	18
John 6:63 It is the Spirit who gives life; the flesh is no help at all. The words that I have spoken to you are spirit and life.	19
Matthew 16:18 And I tell you, you are Peter, and on this rock I will build my church, and the gates of hell shall not prevail against it.	20
Genesis 2:7 then the Lord God formed the man of dust from the ground and breathed into his nostrils the breath of life, and the man became a living creature.	34

Grundtvig referred to 1 Corinthians 13:13 41 times, but he liked the preceding verse even more, since he referred to 1 Corinthians 13:12 (as mentioned above) 54 times. The number of times a given bible location is referred to as presented in this paper depends on two factors, where the number of times he actually used is just one. The other one is the

³ <https://biblehub.com/genesis/1-27.htm>

⁴ https://biblehub.com/1_corinthians/13-13.htm

philologists effort to identify the references, and their ability to do so in a text where the references are just vague hints of a location. Hence there are some possible systematic errors hidden here: Not all works are equal and philologists might invest more in some important ones than in other. Also, I can imagine that bible references could be more difficult to identify in poetry and fiction where the intellectual practice does not force an author to make clear references.

I have noticed one further thing using the search engine for [Grundtvigs Værker](#), namely that the number of works a reference appears in is not necessarily related to the number of times a reference is used. What you find below is an outline of my analysis of his use of bible references.

Materials and Methods

The Grundtvig data for the portal comes from the Århus university's (2009) [Center for Grundtvigforskning](#), the publisher of [Grundtvigs Værker](#). (I refer to the scientific edition of Grundtvig's works as GV in the following.)

GV is a work-in-progress. This analysis is based on release 1.17 of GV. Katrine Frøkjær Baunvig (pers. comm) points out that it contains only 47% of Grundtvig's printed works, and that this fraction is biased towards the earlier half of his career.

The texts are encoded [according to TEI P5 guidelines](#). Bible references are entered into the text in `<rs> ... </rs>` elements like this.

```
<rs key="1 Mos 2,7" type="bible">1 Mos 2,7</rs>
```

Which is a reference to [Genesis 2:7](#) . Often Grundtvig made the references less obvious, like this reference to Mathews 13:43 in a line of verse:

```
<l>Til det opgaaer  
<rs type="bible"  
  key="Matt 13,43"  
  rend="allusion">i Sole-Glands</rs>!</l>
```

The references are categorized into categories which can be found in the `@rend` attribute. In this case it is an *allusion*. The more generic *reference* is more common, and there are some other variants like *quote*. I haven't used these categories yet.

Most of the analyses presented are inspired by Kenneth Ward Church and his brilliant [Unix™ for Poets](#). The [cluster analyses was made using the language R](#), see [Altuna Akalin \(2020\) Computational Genomics with R](#).

The sources of my scripts and the extracted data used are available on Github ([Lundberg, 2022](#))

Table 2. The six most frequent bible references for prose.

Bible location	# usages
1 Corinthians 13:13 So now faith, hope, and love abide, these three; but the greatest of these is love.	31
John 1:14 And the Word became flesh and dwelt among us, and we have seen his glory, glory as of the only Son from the Father, full of grace and truth.	31
Matthew 16:18 And I tell you, you are Peter, and on this rock I will build my church, and the gates of hell shall not prevail against it.	39
John 8:44 You are of your father the devil, and your will is to do your father's desires. He was a murderer from the beginning, and does not stand in the truth, because there is no truth in him. When he lies, he speaks out of his own character, for he is a liar and the father of lies.	40
Matthew 28:18-20 and Matthew 26:26-29 And Jesus came and said to them, "All authority in heaven and on earth has been given to me. Go therefore and make disciples of all nations, baptizing them in[a] the name of the Father and of the Son and of the Holy Spirit, teaching them to observe all that I have commanded you. And behold, I am with you always, to the end of the age." and Now as they were eating, Jesus took bread, and after blessing it broke it and gave it to the disciples, and said, "Take, eat; this is my body." And he took a cup, and when he had given thanks he gave it to them, saying, "Drink of it, all of you, for this is my blood of the covenant, which is poured out for many for the forgiveness of sins. I tell you I will not drink again of this fruit of the vine until that day when I drink it new with you in my Father's kingdom."	43
Genesis 1:27 So God created man in his own image, in the image of God he created him; male and female he created them	52

Analyses

Grundtvig was an active and prolific author over a period of close to 70 years (Figure 1) . When his productivity peaked, it often did so for both verse and prose in parallel. Sometimes the two genres peaked consecutive years. Modern readers usually think of him as a poet or author of psalms, but he did write significantly more prose of all kinds. (Swedes in my generation, and I suppose Norwegians, sang some of his psalms in school but not much else and hardly read any prose.) Even years when his production of verse is high, there always appear some prose as well; usually more than verse.

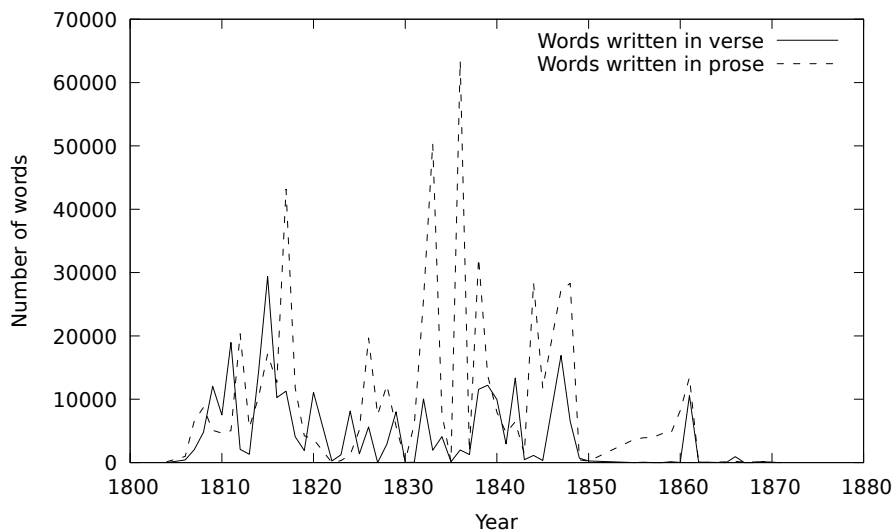


Figure 1. The number of words written per year, for verse (solid curve) and in prose (dashed curve). As I point in the main text, the version of GV used in this analysis contains only 47% of his printed *oeuvre*, with a bias towards earlier part of Grundtvig's career. This is the major reason for his seemingly lower text production between 1850 – 1872.

The philologists at the Grundtvig centre has identified 11499 bible references in the GV. They refer to 4637 locations, i.e., Grundtvig referred to each location 2.5 times on the average. In reality there are large numbers of bible locations that just appear once in a reference, whereas he had a number of favourites which is cited 60 to 70 times in the corpus.

The current version of GV has grown from 47% to 52% of Grundtvig's printed *oeuvre*, and the number of known references has grown to 13700 (Katrine Frøkjær Baunvig, pers. comm). The total number of references increases as the work on GV continues, hence all conclusions here are tentative.

For the prose there are in total 2663 bible locations. The distribution is such that there are 1477 locations that are referenced once, 670 twice and 468 locations used 3 to 9 times. At the other end of the distribution, one location [Genesis 1:27](#) is referenced 52 times. Of the 2663 locations used in prose, only a small fraction, 48 locations, are referenced 10 and more times. Note that the reference which occurs in the largest number of texts and the one occurring the largest number times differ. He repeats the references.

For verse there are 2094 locations. 431 are referenced once, 1321 twice, 313 3 to 9 times, and 21 are used 10 or more times. His absolute favourite for verse is [Genesis 2:7](#).

The distributions of bible references for verse and prose can be seen in [Figure 2](#). It visualizes the observations mentioned. For references occurring in verse, the distribution starts lower and actually increases towards a peak, whereas for prose it decreases initially. Grundtvig seem to have more or less different favourite bible locations in verse and prose. See [Table 1](#) and [Table 2](#), respectively. They contain the six most frequently used locations for each type of text.

It is interesting that it is two different locations in Genesis that holds the top positions. Grundtvig's choice for prose is from the Priestly narrative, and his preference for verse comes

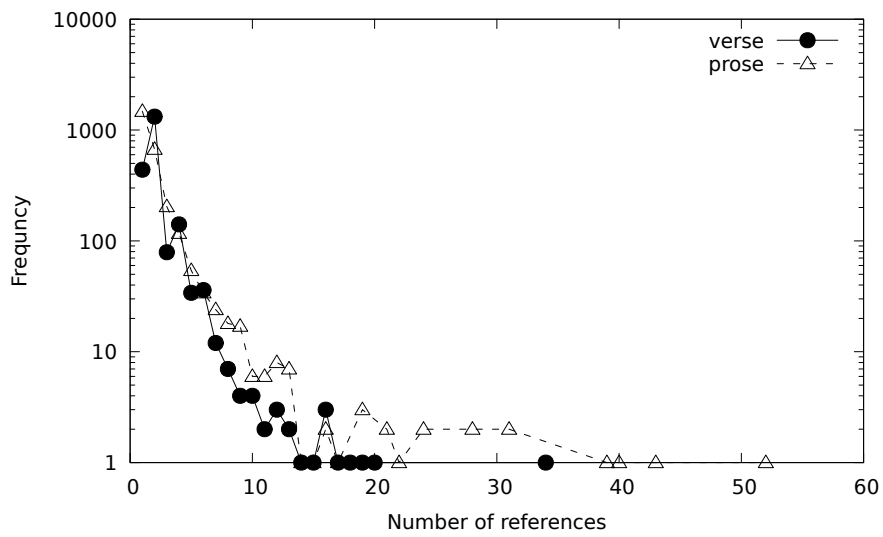


Figure 2. The distributions showing the frequency for different numbers of references, for in verse references (solid curve, bullets) and references occurring i prose (dashed curve, open triangles). Note the logarithmic scale on the y-axis.

the Jahwist story (see [Wikipedia 2004](#)). The two quotes are in [Table 2](#) and [Table 1](#), respectively. Obviously, we cannot know, but somehow the two could fill the same role in his writing of prose and verse, respectively. It could be that he basically find that the Jahwist narrative more poetic.

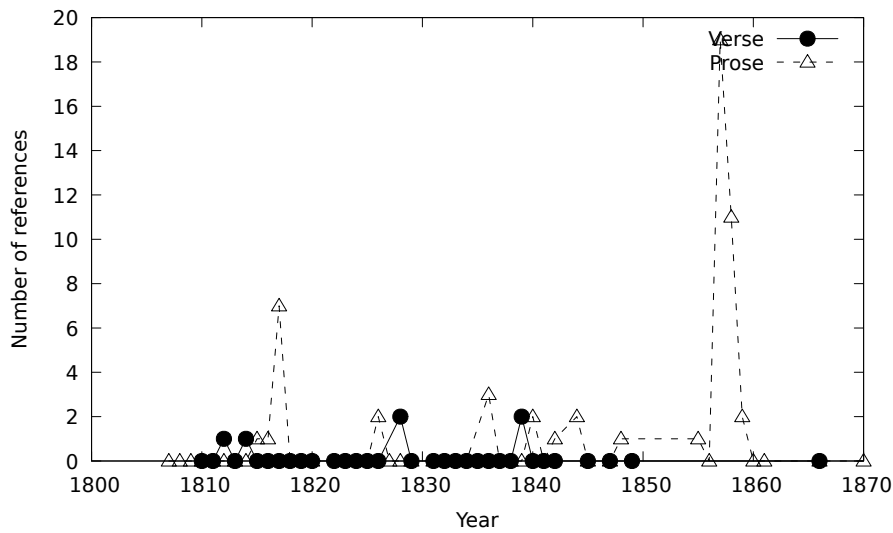


Figure 3. Grundtvig's use of Genesis 1:27 in verse (solid curve) and prose (dashed curve)

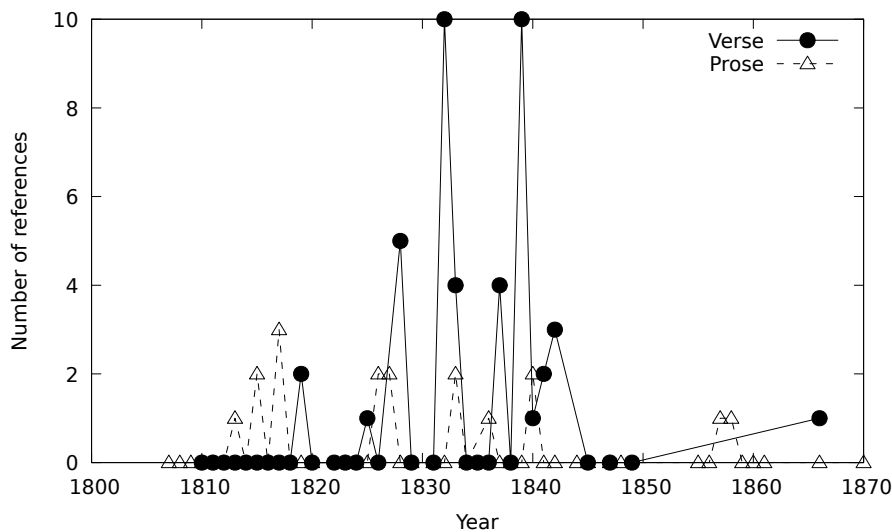


Figure 4. Grundtvig's use of Genesis 2:7 in verse (solid curve) and prose (dashed curve)

I have used the counts of some of the most frequently used individual bible references to compare all the years of Grundtvig's professional life. To continue with his references to Genesis, he not only refers to Genesis 1:27 mostly in prose, he does so fairly early and late in his career (Figure 3), whereas he refers to Genesis 2:7 more in poetry but he does so between 1830–1840 in the midst of his career. That is, Grundtvig not only uses some references differently in verse and prose, he changes his preferences over time.

There are ongoing discussions on what dates that are most significant in Grundtvig's career. “*Within the ever-growing bulk of Grundtvig studies, the years 1810, 1825, 1832, 1835, 1838, 1839, and 1848 are competing for scholarly attention*”, writes Nielbo et al. (2019). On the other hand, other authors points to entirely different dates. For instance, in a detailed schedule of events in his life, Engebretsen (2008) points out the years 1810, 1844, 1853, 1867 as life crises, and also mentions the poets bipolar disease. Thodberg (2005) writes about the crisis 1844.

I find it premature to try to correlate most of my findings to events in the life of N.F.S. Grundtvig. However, volume 2 of his *Sang-Værk til den Danske Kirke*, with psalms and songs appeared 1839, and so did other works of verse (Center for Grundtvigforskning, 2010-). On the whole, the late 1830s and early 1840s was a very productive period of his life (Figure 1). It was after that the censuring of Grundtvig 1826–1837 was finally lifted. He then became pastor at the Vartov hospital in Copenhagen (Thodberg, 2009). This happened through a court order following the publication of *Kirkens Gienmæle* (Grundtvig 1825). See also (Thodberg, 2009). Obviously Grundtvig had quite a few completed manuscripts waiting ready for the press.

John 6:63 (Table 1) does not reach the top 6 list for prose, only for verse. Numerically, this passage is roughly the same for both genres (Figure 5), but that is mainly due to the fact that Grundtvig wrote much more prose than verse. It seems that Matthew 16:18 (Table 1) is very important for Grundtvig, since it reaches top 6 list for both verse and prose (Matthew 16:18,

Table 2) . Again you see how it appears in prose early and late in his career, and in verse during 1830-1840. This one is about the church. He is returning to this one over and over again, in (I believe) his role as a pastor in the Church of Denmark.

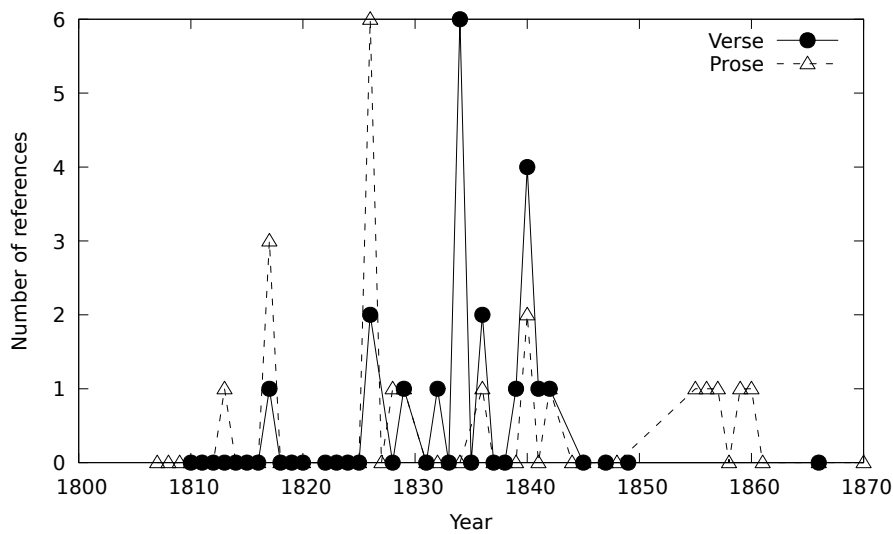


Figure 5. Grundtvig's use of John 6:63.

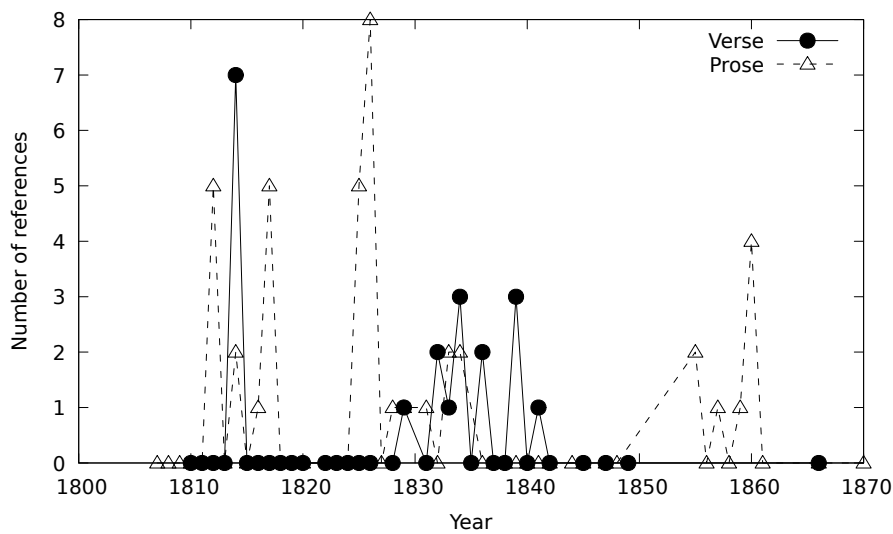


Figure 6. Grundtvig's use of Matthew 16:18.

I could have omitted [Proverbs 4:23](#) . It appears on the top list for verse ([Figure 7](#)) and does so only because Grundtvig refers to it in one song with 18 verses ([Grundtvig, 1839](#)), with the references in each of the 18 choruses. This is good as a reminder of the fact that at this level of the study we have very small sample sizes.

The [Psalm 23:4](#) is on the top list for verse only and Grundtvig quotes it on many occasions ([Figure 8](#)), but much more in verse than in prose. I cannot think of any piece that could better comfort a distressed pastor and poet it would be [Psalm 23](#).

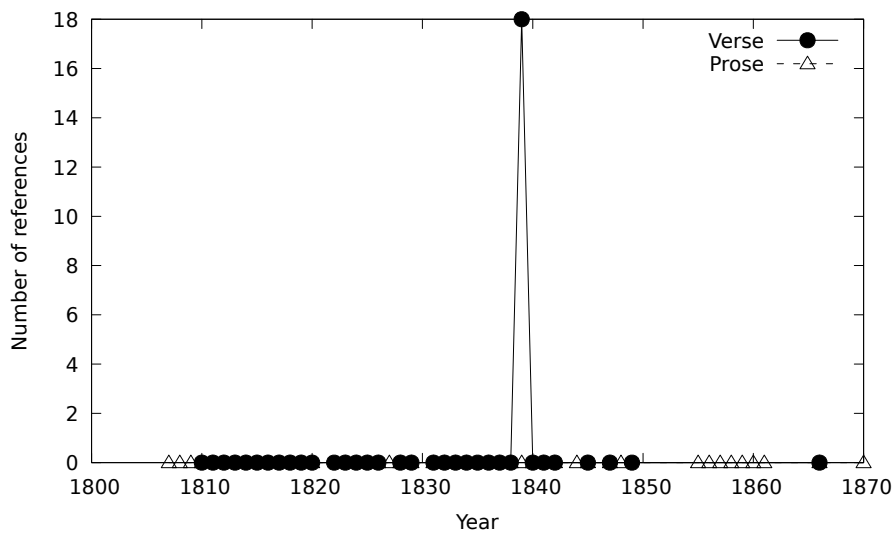


Figure 7. Grundtvig's use of Proverbs 4:23.

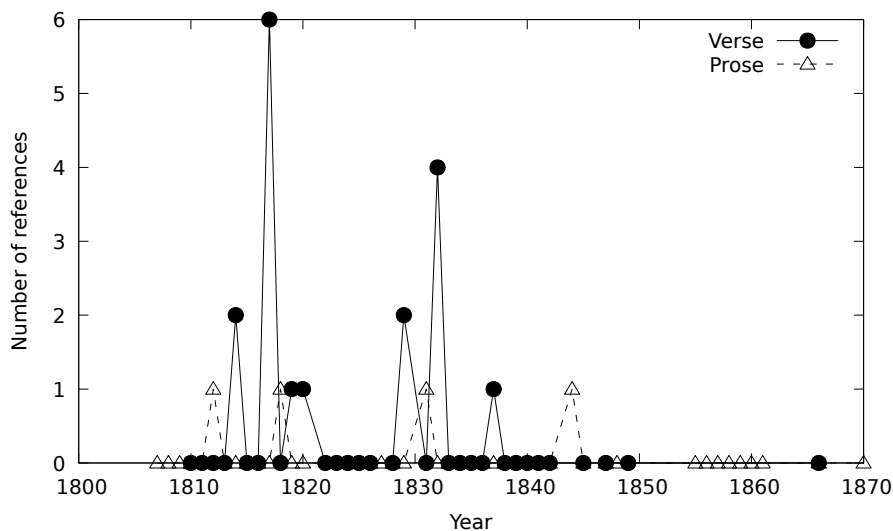


Figure 8. Grundtvig's use of Psalm 23:4.

In the *Introduction* I described how I was inspired to this paper through the development work I was involved in at the time. In particular how I stumbled upon Grundtvig's use of [1 Corinthians 13:12](#) and [1 Corinthians 13:13](#), respectively. I feel obliged to present the graphs for them as well, see [Figure 10](#) and [Figure 11](#). They are so very different from each other! The former

is used in poetry, except for some heavy use 1810–1820. The latter is use intensively almost fifty years later in a text actually entitled *Faith, hope and love* (Grundtvig, 1858). Hence, this is a similar situation as the one we found in [Proverbs 4:23](#), i.e., a single document where Grundtvig is linking so abundantly to single target that it affects overall trends for that target.

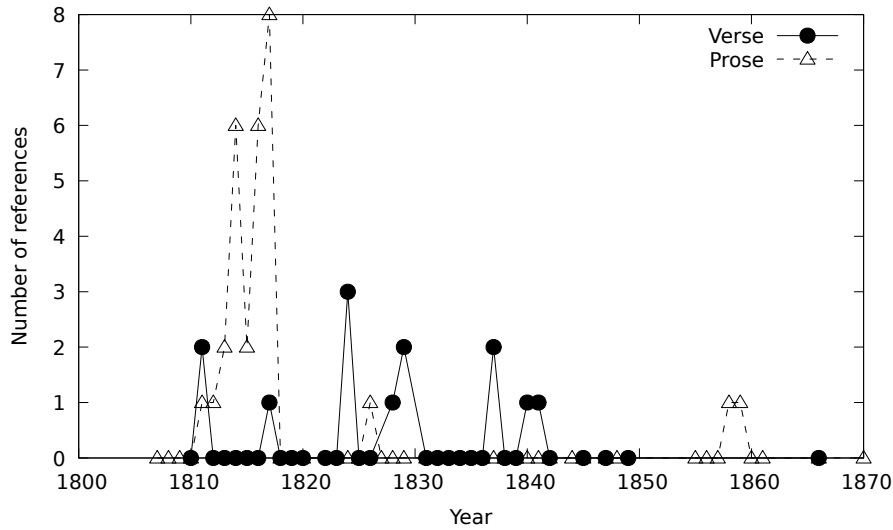


Figure 10. Grundtvig's use of 1 Corinthians 13:12.

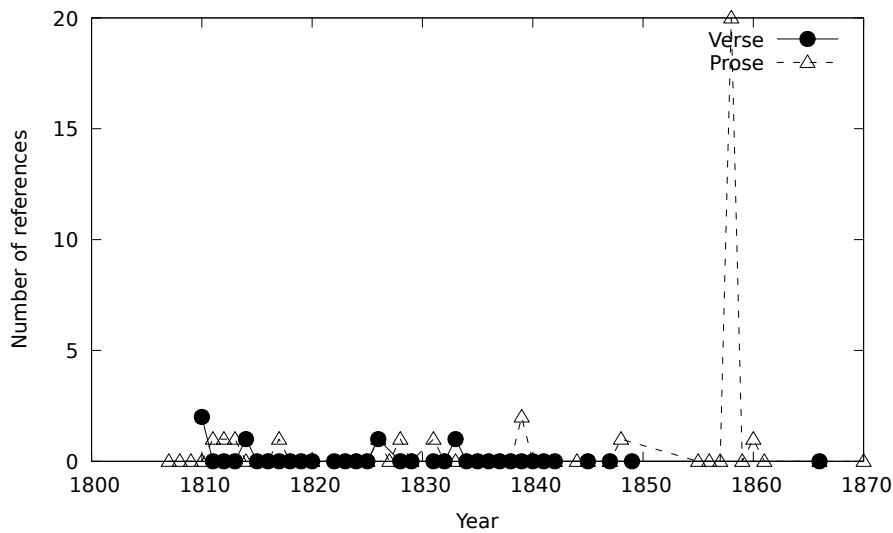
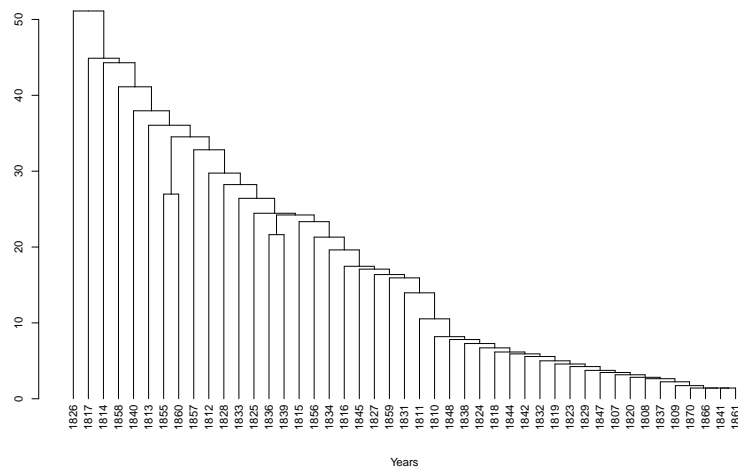


Figure 11. Grundtvig's use of 1 Corinthians 13:13.

(a)



(b)

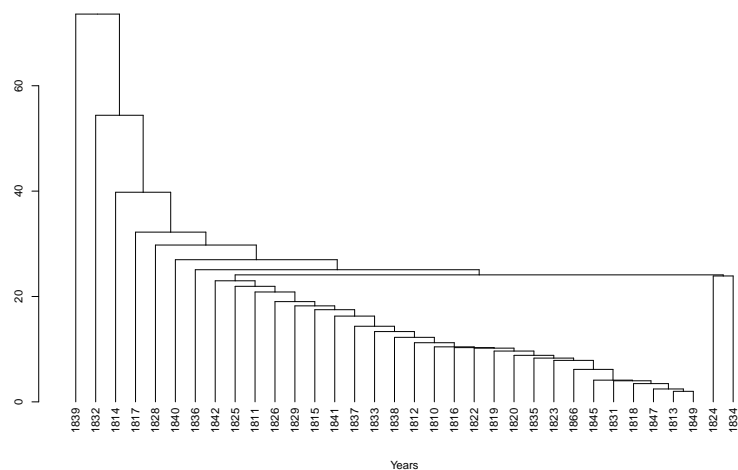


Figure 9. Cladograms of a similarity matrix for years, calculated for prose (a) and verse (b).

Discussion

I could go on like this. For instance, I could have analysed 1 Corinthians 14:34⁵ and studied that in the light of his three marriages.⁶ Grundtvig was always much more sophisticated than that.

Also I could have studied similarities between known significant works (rather than years). In retrospect I think that would have been much more fruitful, and that is what I will do if I ever return to these problems.

⁵ https://biblehub.com/1_corinthians/14-34.htm

⁶ As a matter of fact, I started that, but it turned out that Grundtvig did not quote that passage.

As a matter of fact I began this work from a 10,000 foot perspective, investigating how his total usage of bible references varied over time. That is trivial. Given a certain density of references (eg., measured as the number of quotations per word, or whatever) the resulting yearly fluctuations are proportional to the fluctuation of the total text production.

Instead I looked at the number of each of the 2663 bible locations he used each year, as a property of that year. That means that each year became a point in a 2663-dimensional space, and from that I could calculate the distance between all of the years in that space. From those points in that space, I could compute similarity matrices (Nguyen, 2014). Then, finally, I could make a cluster analysis and plot cladograms visualizing the distances between all these years in Grundtvig's career. I did so first for the whole corpus, but decided to do it separately for prose and verse. See Figure 9a and b, respectively.

This sounds much more complicated than it is; for prose the algorithm selects 1826 as a start year, and find that the year which is most like it in terms of bible references is 1817, which in turn is very much like 1858 and 1840. It should not surprise you that this procedure is often used in biological taxonomy for inferring relations between species. For verse, the algorithm starts at 1839 and go from there to 1832, 1814, 1817 etc.

1826 – 1837 are the years Grundtvig was censured by a court order (see above) and 1839 when he became pastor at Vartov. That job was apparently not very demanding (Petersen, 2009). 1837 – 1839 were the years when he finally could print his *Sang-Værk til den Danske Kirke*, with psalms and songs appeared. 1839 he printed volume 2. From 1839 onwards he had a stable income.

The cluster analyses chooses 1826 as the focal year for prose, and 1839 as the one for verse. There is a pattern in this, which I feel could be significant. Nielbo et al. (2019) also mention these two years, and in addition they characterises the dynamics of Grundtvig's language in that period as having "Short memory." This means that Grundtvig's vocabulary diversity is temporally uncorrelated between years in that period.

It seems to me that my cluster analysis is related to the time series analysis in as much as we compare points in time with each other. My similarity matrices do, however, ignore the *series* and concentrate upon the *points in time*. It regards the years as individual objects. 1839 is most similar to 1832 which is a bit like 1814. If the texts we compare are written in verse, that is. However, if the text is prose it is different; then 1839 is more like 1836 and bears hardly any similarities with 1832. I believe that the differences are due to what Grundtvig is actually writing; both his vocabulary and the set of bible locations he refers to depend on that.

Acknowledgements

This contribution would have been impossible without access to the TEI source of GV, provided through our collaboration with Center for Grundtvigforskning. Its head, Katrine Frøkjær Baunvig, and her colleagues the philologists working with the texts, have provided valuable and very important comments on an earlier version of the manuscript. All remaining mistakes are mine.

References

Akalin, Altuna, 2020. *Computational Genomics with R*

<https://compgenomr.github.io/book/clustering-grouping-samples-based-on-their-similarity.html>

- Center for Grundtvigforskning, and Det Kgl. Bibliotek, 2021. Grundtvigs Værker. In: *Det Kgl. Biblioteks tekstportal*
<https://tekster.kb.dk/gv>
- Center for Grundtvigforskning, 2010-. *Kronologisk oversigt*
<http://www.grundtvigsvaerker.dk/krono>
- Center for Grundtvigforskning, 2010. *Grundtvigs Værker*
<http://grundtvigsvaerker.dk/>
- Church, Kenneth Ward, [date unknown]. *Unix™ for Poets*
<https://web.stanford.edu/class/cs124/kwc-unix-for-poets.pdf>
- Development Core Team, 2010. *R: A language and environment for statistical computing* [Computer software]. Vienna, Austria. Available from <http://www.R-project.org>
- Engelbrechtsen, Else Bang, 2008. *Grundtvig Kriseåret 1810/1811 - Anfægtelser eller galskab?*
<http://urn.nb.no/URN:NBN:no-21152>
- Grundtvig, N. F. S., 1825. Kirkens Gienmæle mod Professor Theologiae Dr. H. N. Clausen. In: *Grundtvigs værker* Read February 17, 2023
https://tekster.kb.dk/text/gv-1825_413A-txt-root
- Grundtvig, N. F. S., 1858. Tro og Haab og Kjærlighed. In: *Grundtvigs værker* Read February 17, 2023
https://tekster.kb.dk/text/gv-1858_1227-txt-root
- Grundtvig, N.F.S., 1839. No. 22. Solen er heed. In: *Sang-Værk til den Danske Kirke (II)*
https://tekster.kb.dk/text/gv-1839_621-txt-root#idm5659
- Lundberg, Sigfrid, 2022. *On Grundtvig and his use of bible references* The scripts used to this analysis, together with the raw data extracted from the Grundtvig text corpus.
<https://github.com/siglun/bible-references>
- Nguyen, Eric, 2014. Chapter 4 - Text Mining and Network Analysis of Digital Libraries in R. In: *Data Mining Applications with R* pp. 38-67.
<https://doi.org/10.1016/B978-0-12-411511-8.00004-9>
- Nielbo, Kristoffer L., Katrine F. Baunvig, Bin Liu, and Jianbo Gao, 2019. A curious case of entropic decay: Persistent complexity in textual cultural heritage. In: *Digital Scholarship in the Humanities* Vol. 34(3), pp. 542-557.
<https://doi.org/10.1093/llc/fqy054>
- Petersen, Irene, 2009. *Grundtvig blev dømt for at svine professor til*
<https://videnskab.dk/kultur-samfund/grundtvig-blev-domt-svine-professor-til>
- The TEI Consortium, 2022. *TEI P5: Guidelines for Electronic Text Encoding and Interchange*
<https://tei-c.org/release/doc/tei-p5-doc/en/html/index.html>
- Thodberg, Christian, 2009. N.F.S. Grundtvig. In: *Den Store Danske* Read February 17, 2023.
https://denstoredanske.lex.dk/N.F.S._Grundtvig
- Thodberg, Christian, 2005. Grundtvigs krise i foråret 1844. Forholdet mellem prædiken og salme med henblik på “Sov sødt, Barnlille”. In: *Grundtvig-Studier* Vol. 56(1), pp. 38-67.
<https://doi.org/10.7146/grs.v56i1.16469>

Wikipedia, 2003. N. F. S. Grundtvig. In: *Wikipedia, the free encyclopedia*
https://en.wikipedia.org/wiki/N._F._S._Grundtvig

Wikipedia, 2004. Genesis creation narrative. In: *Wikipedia, the free encyclopedia*
https://en.wikipedia.org/wiki/Genesis_creation_narrative

Århus university, 2010. *Center for Grundtvigforskning*
<https://grundtvigcenteret.au.dk/>