

Universe Building

Last updated: 2026/09/05, 11:14:29 EDT

DOI:

Principles of Complex Systems, Vols. 1, 2, 3D, 4 Fourever, V for Vendetta

Deliverator: Peter Sheridan Dodds

Showrunner: ↑

Computational Story Lab | Vermont Complex Systems Institute
University of Vermont | Santa Fe Institute



The PoCSverse
Build your own
Universe
1 of 34

Structure

On writing

Research ⇔ teaching

Figure making

Narrative hierarchy

A way

References



Licensed under the Creative Commons Attribution 4.0 International

These slides are brought to you by:

Sealie & Lambie Productions



The PoCVerse
Build your own
Universe
2 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

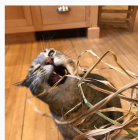
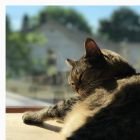
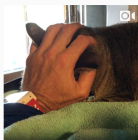
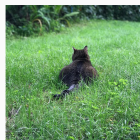
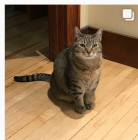
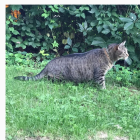
A way

References



These slides are also brought to you by:

Special Guest Executive Producer



 On Instagram at [pratchett_the_cat](https://www.instagram.com/pratchett_the_cat) 

The PoCVerse
Build your own
Universe
3 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

References



Outline

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References

The PoCverse
Build your own
Universe
4 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References



The PoCVerse
Build your own
Universe

5 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References



Possible paths:

Build your own interconnected universe

-  Papers are the essential product.
-  Everything else from social media to books flows out from papers.
-  Papers: Aim to be meaningful to others in whatever way.
-  Shareworthiness: Will people read your paper and share it with others in a positive way that will endure?
-  Proposals are papers from the adjacent possible.
-  LaTeX/Beamer: Papers + slides + bibliography.
-  Deeply live in Unix systems. Linux, Mac, VACC, Silk. The OG Data Science platform.

The PoCverse
Build your own
Universe
5 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References



Possible paths:

Build your own interconnected universe

- Time is the Big Sort: Prefix work directories with YYYY-MM, smaller scale with YYYY-MM-DD.
- Categorize major areas with directories, projects inside of them.
- Knowledge is a networked hierarchy: Symbolic links.
- AI, Overleaf, and everything in the cloud: Needs some kind of ordering, taxonomy.
- Create passive work logs, measurements.
`makemanuscript.pl, print_universal.m`
- Use AI. Thoughtfully. Everything is changing.

The PoCverse
Build your own
Universe
6 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

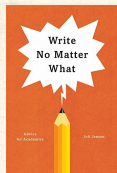
Narrative hierarchy

A way

References



Three books on writing:



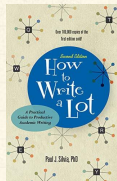
“Write No Matter What: Advice for Academics” [a](#) [↗](#)
by Joli Jensen (2017). ^[4]



Holistic advice for academics, not just writing.



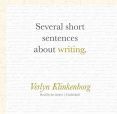
Keys: Project Box, Ventilation.



“How to Write a Lot: A Practical Guide to Productive Academic Writing” [a](#) [↗](#)
by Paul J. Silvia (2018). ^[6]



Get it done.



“Several Short Sentences About Writing” [a](#) [↗](#)
by Verlyn Klinkenborg (2012). ^[5]



Dive in anywhere. Vibes.

The PoCVerse
Build your own
Universe

7 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

References



Explore creativity and process outside of your work:

-  Take in anything on how to create anything.
-  Everything  about the Muppets .
-  Translate/copy/test elements as you build/adapt/refine your own processes



Movies



Novels



Policy



TV series



Gardens



Sport



Music



Cooking



Nature



Comics



City planning



...



Architecture



Farming



Better writing, editing, and thinking through the power of line breaks:



The physical typesetting of writing in books forced the tight paragraph structure with an indent.



Physical constraint became equated with how writing should look.



But: Writing as coding.



LaTeX: Organize vertically for thinking and editing.



Each element that could be moved backwards and forwards in writing stands alone in a vertical stack.



Sentences, phrases, mathematical pieces, items, ...



L^AT_EX: textblock structure: [3]

The PoCVerse
Build your own
Universe
10 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

References

```
archetypometrics.body.tex<2023-03archetypometrics>
1274 \textbf{Heat maps:}
1275 \item
1276   For all ouisigrams~\cite{dodds2021b},
1277   we use the perceptually uniform colormap 'ice'
1278   for trait space and
1279   'magma' for character space
1280   (per Ref.~\cite{hyng2016a}).
1281 \item
1282   The table colors for traits and characters
1283   are elements of these two colormaps.
1284 \end{textblock}
1285
1286 \subsection{Notation for dimensions, traits, and archetypes}
1287 \label{subsec:archetypometrics.notation}
1288
1289 \begin{textblock}
1290 \item
1291   For all essential dimensions, we have
1292   the standard notation from SVD:
1293 \item
1294    $\hat{\text{traitdimvar}}_{(i)}$ 
1295   for traits
1296   and
1297    $\hat{\text{chardimvar}}_{(i)}$ 
1298   for characters.
1299 \item
1300   To indicate essential directions
1301   (Section~\ref{subsec:archetypometrics.SVD}),
1302   we include a sign.
1303 \item
1304   For example,
1305   we indicate the positive direction
1306   of the first essential dimension
1307   of trait space with
1308 \item
1309    $+\hat{\text{traitdimvar}}_{(1)}$ ,
1310 \item
1311   and
1312 \item
1313   the negative direction of
1314   the third essential dimension of character space
1315 \item
1316   with
1317 \item
1318    $-\hat{\text{chardimvar}}_{(3)}$ .
1319 \end{textblock}
1320
1321 \begin{textblock}
1322 \item
1323   Rarely, we will need variables
1324   representing
1325   traits,
1326   characters,
1327   and
1328   archetypes.
1329 \item
1330   We will use the notation
archetypometrics.body.tex<2023-03archetypometrics> 11% (1286,0) (LaTeX Fly) 11:31AM
Mark set
```



Research ⇔ Teaching

The PoCSverse
Build your own
Universe
11 of 34

Structure

On writing

Research ⇔ teaching

Figure making

Narrative hierarchy

A way

References

 The PoCSverse: <https://pdodds.w3.uvm.edu/pocsverse/> 

 Build graduate classes that are research engines.

 Class projects become papers, help papers along.

P
o
C
S



What's
The
Story?



Figure making:

The PoCverse
Build your own
Universe
12 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

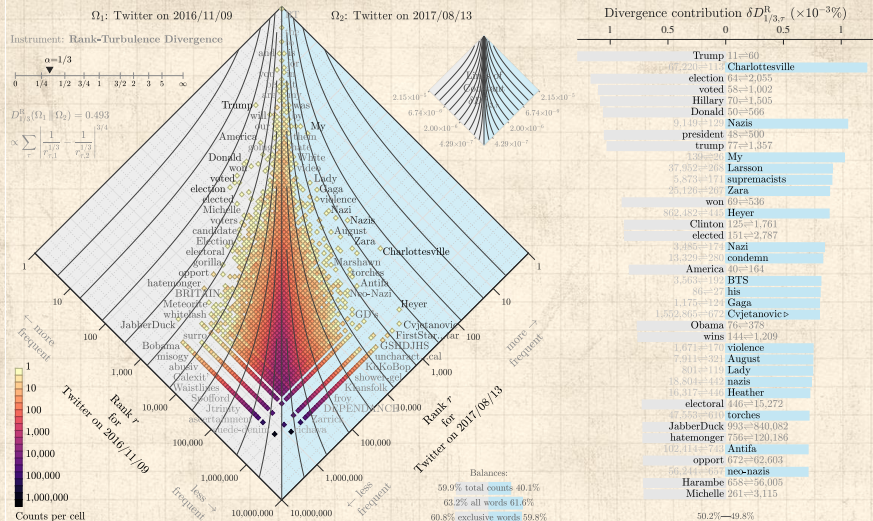
A way

References

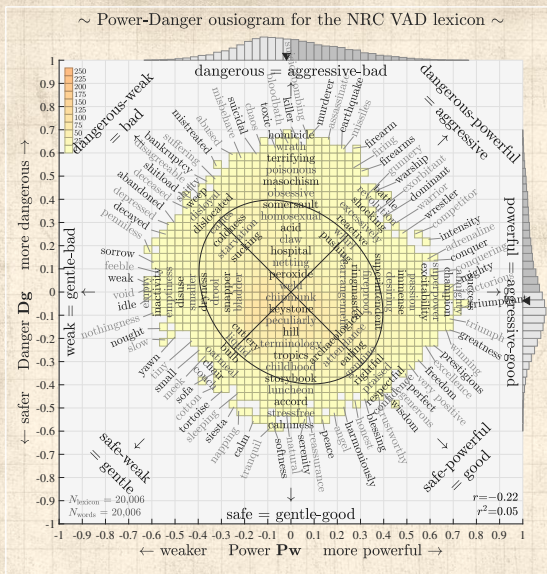
Every figure is a script

- 🧱 Ideal: Be able to rebuild a paper from one command, including figures.
- 🧱 At least have the sequence of operations to recorded.
- 🧱 “Never use the mouse.”
- 🧱 Figure making scripts encode knowledge and understanding.
- 🧱 Over time, generate reusable structures, modules; a house style.
- 🧱 Following examples are all from scripts.





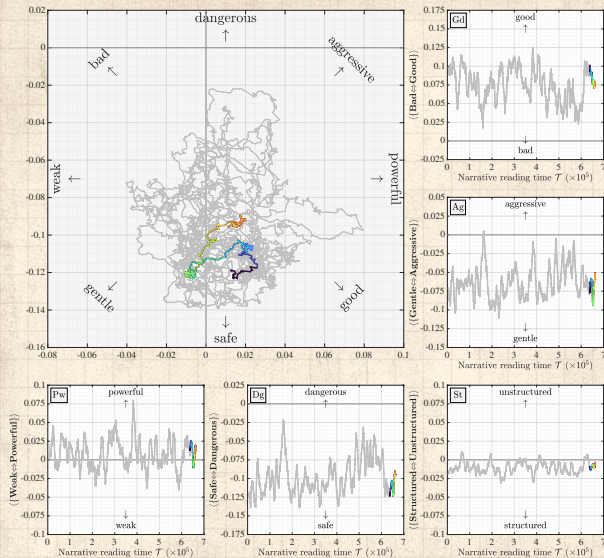
Allotaxonomy and rank-turbulence divergence: A universal instrument for comparing complex systems [2]



Ousiometrics: The essence of meaning aligns with a power-danger-structure framework instead of valence-arousal-dominance ^[1]



"Les Misérables" by Victor Hugo (English translation)



The PoCVerse
Build your own
Universe
15 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References

Ousiometrics: The essence of meaning aligns with a power-danger-structure framework instead of valence-arousal-dominance ^[1]





The PoCVerse
Build your own
Universe
16 of 34

Structure

On writing

Research ⇌ teaching

Figure making

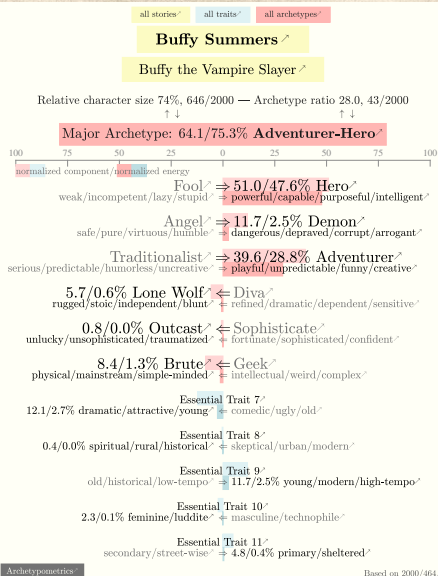
Narrative hierarchy

A way

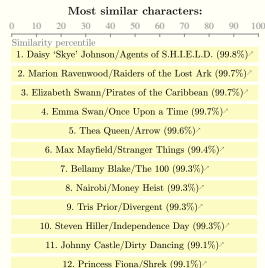
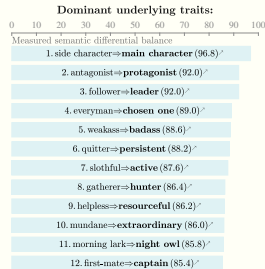
References



Archetypometrics, a Pragmateia: Empirical determination of the fundamental archetypes of fictional characters [3]



Based on 2000/464/341 characters/traits/stories—switch to 800/235/90* or 1600/364/241*

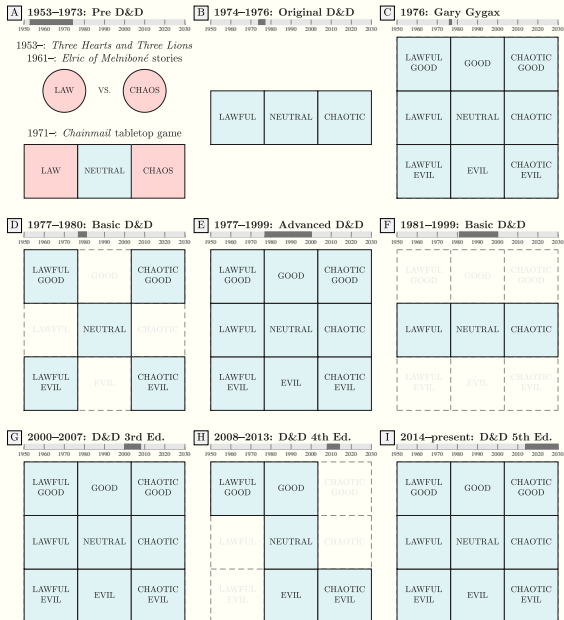


The PoCVerse
Build your own
Universe
17 of 34
Structure
On writing
Research ⇌ teaching
Figure making
Narrative hierarchy
A way
References



Archetypometrics, a Pragmateia: Empirical determination of the fundamental archetypes of fictional characters [3]

Alignment chart evolution:



The PoCVerse
Build your own
Universe
18 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

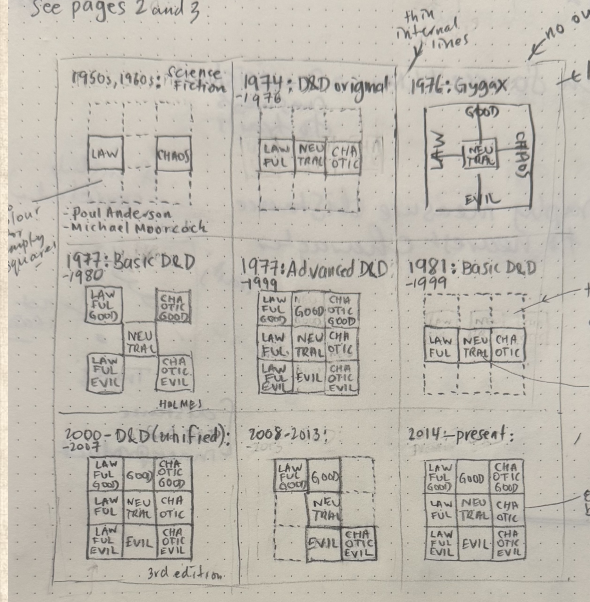
References



Alignment chart evolution—sketch:

D&D alignment evolution

See pages 2 and 3



The PoCVerse
Build your own
Universe
19 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

References



Storytelling: Interactive data visualizations

The PoCVerse
Build your own
Universe
20 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

References



Inspiration: Major news outlets: The Economist, NY Times, Financial Times



Inspiration: The Pudding .



Happiness: <https://hedonometer.org/> .



Vonnegut's shapes of stories:



<https://complexstories.uvm.edu> .



33,000+ interconnected PDFs:

compstorylab.org/archetypometrics/cards/stories-2000-464-341.pdf .



The Library of Variably Dangerous Books.¹



¹Truth decay.

The Ten Scales of Stories



The deep knowledge work we must do for two reasons:

-  Imperative: Create and deliver research stories at all scales starting at some floor (paper, project, research area).
-  1. Simply: Critical knowledge creation.
-  2. The danger if we do not do this work: Errors, misinformation, disinformation.
-  We cannot leave the higher scales of stories to others.
-  Titles are hard, abstracts are hard, ...
-  This is not fluff branding but a fundamental responsibility for scientists.

The PoCVerse
Build your own
Universe
21 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

References



The Ten Scales of Stories

Scales 1–3: A few words to a few sentences

1. One to three word encapsulation.

- Soundbites, buzzframes,² slogans, catchphrases, mottos, some maxims.
- E.g., “Coke is it”, “Learned helplessness”, “The Big Bang”, and “Narrative Hierarchy”.

2. One sentence.

- Title, headline, a well crafted tweet, proverbs, aphorisms, epigrams.
- One-liners live here too.
- Good territory for Dorothy Parker and Mark Twain and that fellow who said there was only one thing worse than being talked about.

3. A few sentences.

- The nutshell, a movie's log line ↗, Nautilus's three sentence science ↗.

²**Buzzframe.** Defn (noun): Buzzwords that coherently frame a way of thinking in the listener.



The Ten Scales of Stories

Scales 4–6: A paragraph to a short paper

4. One paragraph.

 An abstract, the lede , the slightly buried nut graph , the elevator pitch, a thirty second television ad, modern movie trailers (which tend to lay out the whole story).

5. One page.

 Standard news article, short magazine article, jokes requiring a very long walk.

6. Short paper.

 Essay, blog post, political speech, the pamphlet, medium magazine article, television news report.



The Ten Scales of Stories

Scales 7–10: A long paper to a universe

The PoCVerse
Build your own
Universe
24 of 34

Structure

On writing

Research ⇌ teaching

Figure making

Narrative hierarchy

A way

References

7. Long paper.

 Book chapter, long magazine article, a movie, episode of a television series.

8. Book.

 Something that looks like a book when made physical and placed on a shelf, PhD thesis, a season of a television series.

9. Series of books.

 Trilogies including increasingly inaccurately named ones , a full television series (e.g., Buffy, Slayer of Vampires).

10. A large coherent body of work, potentially involving many authors.

 Epic sagas, movie franchises, six seasons and a movie, specific research areas, religious scriptures , story universes (the Discworld .



Narrative hierarchy:

Exhortations

The PoCSverse
Build your own
Universe
25 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References

“Any good idea can be stated in fifty words or less.”

—Stanisław Ulam ³



³At the very least, Ulam's claim is self-consistent.

Burn down the Narrative Hierarchy, burn it all down:

Borges:

Writing long books is a laborious and impoverishing act of foolishness:

expanding in five hundred pages an idea that could be perfectly explained in a few minutes.

A better procedure is to pretend that those books already exist and to offer a summary, a commentary.

The PoCVerse
Build your own
Universe
26 of 34

Structure

On writing

Research ⇔ teaching

Figure making

Narrative hierarchy

A way

References



Also Borges, *The Secret Miracle*:⁴

“As all writers,
he judged others based on what they had produced,
and hoped that they would judge him based on
what he had still planned”



⁴“El milagro secreto,” 1943, in *Ficciones*

The absolute basics of basic science:⁵

Computational science in three back and forth steps:

1. Find meaningful+important+interesting phenomena, (optionally) involving spectacular amounts of data that you either put together or obtain from the back of a truck.
2. Describe what you see.
3. Explain it.

Taste matters. Develop taste in research.

Beware your assumptions: Don't use tools/models because they're there, or because everyone else does ...

If you succeed at 1–3:

4. Create.
5. Share.

Always: Be good people.

The PoCVerse
Build your own
Universe
28 of 34
Structure

On writing

Research ⇔ teaching

Figure making

Narrative hierarchy

A way

References

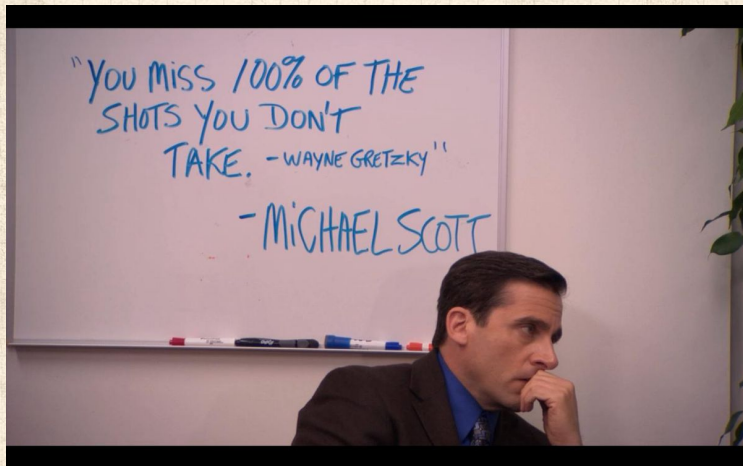


Time:

- Time is primary.
- Be careful and protective of future time.
- An experiment: Record what you spend your time.
Just log time and examine what you do.
- Build a taxonomy.⁶ Not what you planned to do, what you did.
- Become very, very good at saying No.
- Look after your whole self: physically, psychologically, socially, ...



⁶Ancient app: eternity



Build your own Universe:



Copying a full system is a mistake.



The power is in your process, your work

“Never Give Up, Never Surrender”



The PoCVerse
Build your own
Universe
31 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References



References I

- [1] P. S. Dodds, T. Alshaabi, M. I. Fudolig, J. W. Zimmerman, J. Lovato, S. Beaulieu, J. R. Minot, M. V. Arnold, A. J. Reagan, and C. M. Danforth.

Ousiometrics: The essence of meaning aligns with a power-danger-structure framework instead of valence-arousal-dominance.

Science Advances, 12(9):eadr4039, 2026.

arXiv version: <https://arxiv.org/abs/2110.06847>. pdf ↗

- [2] P. S. Dodds, J. R. Minot, M. V. Arnold, T. Alshaabi, J. L. Adams, D. R. Dewhurst, T. J. Gray, M. R. Frank, A. J. Reagan, and C. M. Danforth.

Allotaxonomy and rank-turbulence divergence: A universal instrument for comparing complex systems.

EPJ Data Science, 12(37):1–42, 2023.

arXiv version: <https://arxiv.org/abs/2002.09770>. pdf ↗



References II

- [3] P. S. Dodds, J. W. Zimmerman, C. G. Beauregard, A. M. A. Fehr, M. I. Fudolig, T. R. Tangherlini, and C. M. Danforth. Archetypometrics, a Pragmateia: Empirical determination of the fundamental archetypes of fictional characters. Working paper, Zenodo, page
<https://doi.org/10.5281/zenodo.17117974>, 2025.
Also available on SocArXiv:
<https://doi.org/10.31235/osf.io/6avk5>. pdf ↗
- [4] J. Jensen.
Write No Matter What: Advice for Academics.
Chicago Guides to Writing, Editing, and Publishing.
University of Chicago Press, 2017.
- [5] V. Klinkenborg.
Several Short Sentences About Writing.
Alfred A. Knopf, New York, 2012.



References III

The PoCSverse
Build your own
Universe
34 of 34

Structure

On writing

Research $\Leftrightarrow$ teaching

Figure making

Narrative hierarchy

A way

References

[6] P. J. Silvia.

How to Write a Lot: A Practical Guide to Productive
Academic Writing.

APA LifeTools, Washington, DC, 2nd edition, 2018.



Temporary page!

L^AT_EX was unable to guess the total number of pages correctly. As there was some unprocessed data that should have been added to the final page this extra page has been added to receive it.

If you rerun the document (without altering it) this surplus page will go away, because L^AT_EX now knows how many pages to expect for this document.