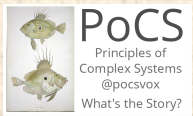
The Meaning of Meaning

Last updated: 2023/08/26, 09:18:43 EDT

Principles of Complex Systems, Vols. 1, 2, & 3D
CSYS/MATH 6701, 6713, & a pretend number, 2023–2024| @pocsvox

Prof. Peter Sheridan Dodds | @peterdodds

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



Licensed under the *Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License*.

The PoCSverse
Meaning
1 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

These slides are brought to you by:

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

These slides are also brought to you by:

Special Guest Executive Producer

On Instagram at pratchett_the_cat

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

Outline

- Measuring essential meaning
  - History
  - Definitions
  - Emotions
- Problems
- Remeasuring meaning
- Ousiograms
  - Extremousionyms
  - Dimension names
- Safety bias
- Applications
  - The Ousiometer
  - Correspondences
  - Nutshell
- Extras
- References

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

The meaning of meaning:

"Ousiometrics and Telegnomics: The essence of meaning conforms to a two-dimensional powerful-weak and dangerous-safe framework with diverse corpora presenting a safety bias"

Dodds et al.,
, 2021. [5]

What does meaning even mean?

- From the smack-tweeting Merriam-Webster:[1]
  "The thing that is conveyed especially by language"
- What are the essential characteristics of meaning?
- Does essential meaning meaningfully span some kind of space?

[1] Life goal: Never get owned by a dictionary on social media

The PoCSverse
Meaning
5 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

This is not easy:

“Abed’s Uncontrollable Christmas”

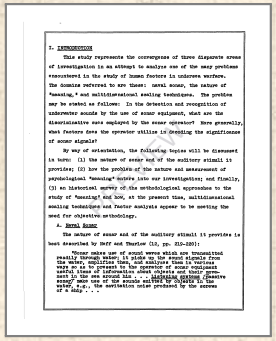
- Abed searches for the meaning of Christmas (in stop animation)
- Abed Nadir: [opens present] “It’s the first season of Lost on DVD.”
- Pierce Hawthorne: “That’s the meaning of Christmas?”
- Abed Nadir: “It’s a metaphor. It represents lack of payoff.”

“Introduction to Teaching”

Abed Nadir: “I thought the meaning of people was somewhere in here. Then I looked inside Nicolas Cage and I found a secret—people are random and pointless.”

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

The meaning of pings:



“A factorial study of complex auditory stimuli (passive sonar sounds)”

L. M. Solomon,
Unpublished Doctoral Dissertation, University of Illinois, , , 1954. [22]

From the introduction:

‘This study represents the convergence of three disparate areas of investigation in an attempt to analyze one of the many problems encountered in the study of human factors in undersea warfare.
The domains referred to are these:

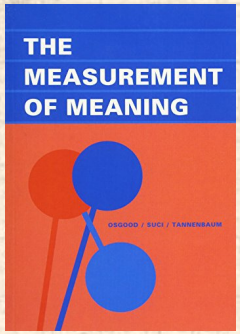
- naval sonar,
- the nature of “meaning,”
- and multidimensional scaling techniques.

The problem may be stated as follows: In the detection and recognition of underwater sounds by the use of sonar equipment, what are the discriminative cues employed by the sonar operator?
More generally, what factors does the operator utilize in decoding the significance of sonar signals?’

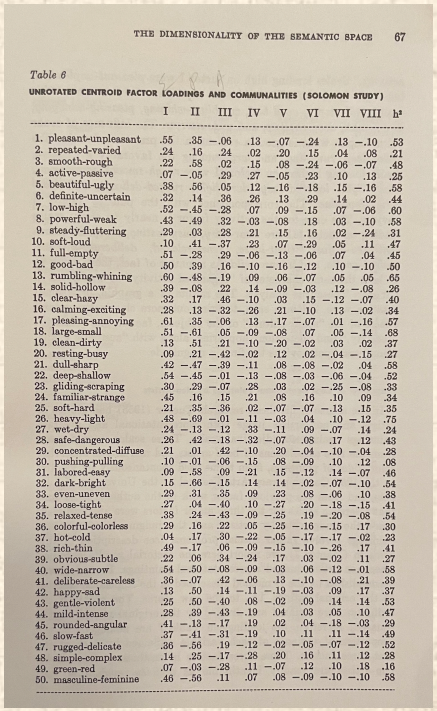
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

From pings to things:

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References



"The Measurement of Meaning" by Osgood, Suci, and Tannenbaum (1957). [13]



THE DIMENSIONALITY OF THE SEMANTIC SPACE 67

Table 6

UNROTATED CENTROID FACTOR LOADINGS AND COMMUNALITIES (SOLOMON STUDY)

	I	II	III	IV	V	VI	VII	VIII	h^2
1. pleasant-unpleasant	.55	.35	−.06	.13	−.07	−.24	.13	−.10	.53
2. repeated-varied	.24	.16	.24	.02	.20	.15	.04	.08	.21
3. smooth-rough	.22	.58	.02	.15	.08	−.24	−.06	−.07	.48
4. active-passive	.07	−.05	.29	.27	−.05	.23	.10	.13	.25
5. beautiful-ugly	.38	.56	.05	.12	−.16	−.18	.15	−.16	.58
6. definite-uncertain	.32	.14	.36	.26	.13	.29	.14	.02	.44
7. low-high	.52	−.45	−.28	.07	.09	−.15	.07	−.06	.60
8. powerful-weak	.43	−.49	.32	−.03	−.08	.18	.03	−.10	.58
9. steady-fluttering	.29	.03	.28	.21	.15	.16	.02	−.24	.31
10. soft-loud	.10	.41	−.37	.23	.07	−.29	.05	.11	.47
11. full-empty	.51	−.28	.29	−.06	−.13	−.06	.07	.04	.45
12. good-bad	.50	.39	.16	−.10	−.16	−.12	.10	−.10	.50
13. rumbling-whining	.60	−.48	−.19	.09	.06	−.07	.05	.05	.55
14. solid-hollow	.39	−.08	.22	.14	−.09	−.03	.12	−.08	.26
15. clear-hazy	.32	.17	.46	−.10	.03	.15	−.12	−.07	.40
16. calming-exciting	.28	.13	−.32	−.26	.21	−.10	.13	−.02	.34
17. pleasing-annoying	.61	.35	−.06	.13	−.17	−.07	.01	−.16	.57
18. large-small	.51	−.61	.05	−.09	−.08	.07	.05	−.14	.68
19. clean-dirty	.13	.51	.21	−.10	−.20	−.02	.03	.02	.37
20. resting-busy	.09	.21	−.42	−.02	.12	.02	−.04	−.15	.27
21. dull-sharp	.42	−.47	−.39	−.11	.08	−.08	−.02	.04	.58
22. deep-shallow	.54	−.45	−.01	.13	−.08	−.03	−.06	−.04	.52
23. gliding-scraping	.30	.29	−.07	.28	.03	.02	−.25	−.08	.33
24. familiar-strange	.45	.16	.15	.21	.08	.16	.10	.09	.34
25. soft-hard	.21	.35	−.36	.02	−.07	−.07	−.13	.15	.35
26. heavy-light	.48	−.69	−.01	−.11	−.03	.04	.10	−.12	.75
27. wet-dry	.24	−.13	−.12	.33	−.11	.09	−.07	.14	.24
28. safe-dangerous	.26	.42	−.18	−.32	−.07	.08	.17	.12	.43
29. concentrated-diffuse	.21	.01	.42	−.10	.20	−.04	−.10	−.04	.28
30. pushing-pulling	.10	−.01	−.06	−.15	.08	−.09	.10	−.12	.08
31. labored-easy	.09	−.58	.09	−.21	.15	−.12	.14	−.07	.46
32. dark-bright	.15	−.66	−.15	.14	.14	−.02	−.07	−.10	.54
33. even-uneven	.29	.31	.35	.09	.23	.08	−.06	.10	.38
34. loose-tight	.27	.04	−.40	.10	−.27	.20	−.18	−.15	.41
35. relaxed-tense	.38	.24	−.43	−.09	−.25	.19	−.20	−.08	.54
36. colorful-colorless	.29	.16	.22	.05	−.25	−.16	−.15	.17	.30
37. hot-cold	.04	.17	.30	−.22	−.05	−.17	−.17	−.02	.23
38. rich-thin	.49	−.17	.06	−.09	−.15	−.10	−.26	.17	.41
39. obvious-subtle	.22	.06	.34	−.24	.17	.03	−.02	.11	.27
40. wide-narrow	.54	−.50	−.08	−.09	−.03	.06	−.12	−.01	.58
41. deliberate-careless	.36	−.07	.42	−.06	.13	−.10	−.08	.21	.39
42. happy-sad	.13	.50	.14	−.11	−.19	−.03	.09	.17	.37
43. gentle-violent	.25	.50	−.40	.08	−.02	.09	.14	.14	.53
44. mild-intense	.28	.39	−.43	−.19	.04	.03	.05	.10	.47
45. rounded-angular	.41	−.13	−.17	.19	.02	.04	−.18	−.03	.29
46. slow-fast	.37	−.41	−.31	−.19	.10	.11	.11	−.14	.49
47. rugged-delicate	.36	−.56	.19	−.12	−.02	−.05	−.07	−.12	.52
48. simple-complex	.14	.25	−.17	−.28	.20	.16	.11	.12	.28
49. green-red	.07	−.03	−.28	.11	−.07	.12	.10	.18	.16
50. masculine-feminine	.46	−.56	.11	.07	.08	−.09	−.10	−.10	.58

- Osgood et al. used semantic differentials and factor analysis to identify a basis of three variables for meaning-space:
  - Evaluation: {bad ⇔ good}
  - Potency: {weak ⇔ strong}
  - Activity: {passive ⇔ active}
- 100s of students, 10s of things, 50 semantic differentials
- "EPA framework"

Semantic differentials from Osgood et al.:[13]

1. pleasant-unpleasant
2. repeated-varied
3. smooth-rough
4. active-passive
5. beautiful-ugly
6. definite-uncertain
7. low-high
8. powerful-weak
9. steady-fluttering
10. soft-loud
11. full-empty
12. good-bad
13. rumbling-whining
14. solid-hollow
15. clear-hazy
16. calming-exciting
17. pleasing-annoying
18. large-small
19. clean-dirty
20. resting-busy
21. dull-sharp
22. deep-shallow
23. gliding-scraping
24. familiar-strange
25. soft-hard
26. heavy-light
27. wet-dry
28. safe-dangerous
29. concentrated-diffuse
30. pushing-pulling
31. labored-easy
32. dark-bright
33. even-uneven
34. loose-tight
35. relaxed-tense
36. colorful-colorless
37. hot-cold
38. rich-thin
39. obvious-subtle
40. wide-narrow
41. deliberate-careless
42. happy-sad
43. gentle-violent
44. mild-intense
45. rounded-angular
46. slow-fast
47. rugged-delicate
48. simple-complex
49. green-red
50. masculine-feminine

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

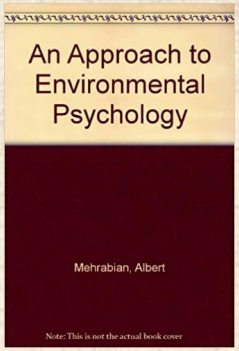
Definitions:

- Ousiometrics: The quantitative study of the essential meaningful components of an entity, however perceived.
- Used in philosophical and theological settings, the word ‘ousia’ comes from Ancient Greek οὐσία.
- To be distinguished from semantics, semiotics, ...
- οὐσία is the etymological root of the word ‘essence’.
- Ousiometry, ousiometer, ousiograms, ...
- Telegnomics: The distant sensing of knowledge (∼ distant reading [12])

Essential dimensions captured by emotion:

- Late 1800s: Three dimensional representation of emotion postulated by Wendt. [23, 17]
- 1970s: Mehrabian and Russell explicitly port EPA framework: [7, 8]
  - Evaluation $\sim$ Pleasure/Valence ($\sim$ Happiness)
  - Potency $\sim$ Dominance
  - Activity $\sim$ Arousal
- VAD has become standard nomenclature even though emotion is less general than meaning.
- Explicit presumption of independence of VAD dimensions, has hardened as fact.
- Intention that VAD $\equiv$ EPA has become lost in literature. [2]

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References



"An Approach to Environmental Psychology."

by Mehrabian and Russell (1974). [7]

"The basic emotional impact of environments"

Mehrabian and Russell,
Perceptual and motor skills, **38**, 283–301, 1974. [8]

> *"Semantic differential studies, in particular, have shown that human judgments of diverse samples of stimuli can be characterized in terms of three dimensions: evaluation, activity, and potency. We have termed the corresponding emotional responses pleasure, arousal, and dominance."*

> *"Thus, each dimension is, in principle, functionally independent of the other two; none of the three dimensions could be subsumed by the others."*

The PoCSverse
Meaning
15 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

Major problems with measuring essential meaning:

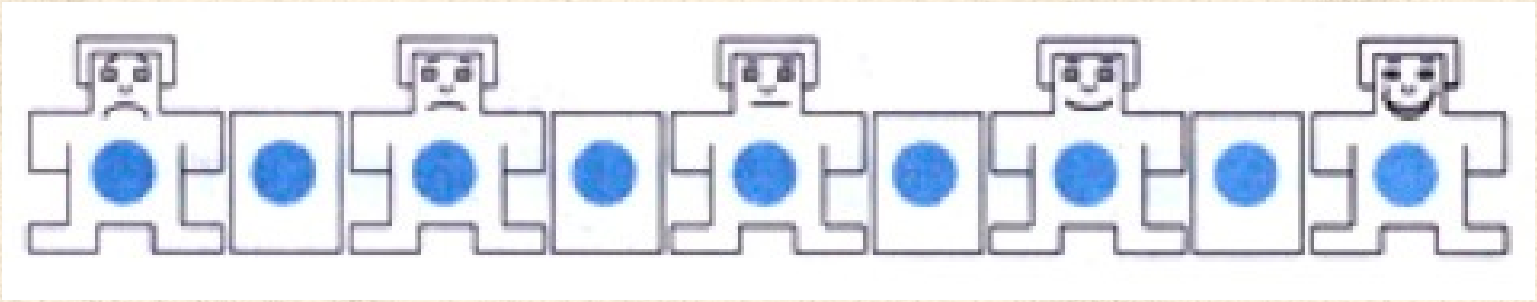
1. **Scale**: Originally 10s and 100s of words $\rightarrow$ now 10,000s + online rating.
2. **The focus on types alone and not tokens:** Missing the forest for the book of tree species.
3. **The use of Likert scales for semantic differentials:** Solid but can be improved upon.
4. **Limitations of factor analysis for a large number of categorical dimensions:** Ousiograms will help sort things out.
5. **The misalignment between expert-chosen, end-point descriptors and dimensions of essential meaning:** How to guide raters to score VAD dimensions?

   Solution is to always perform factor analysis (SVD).

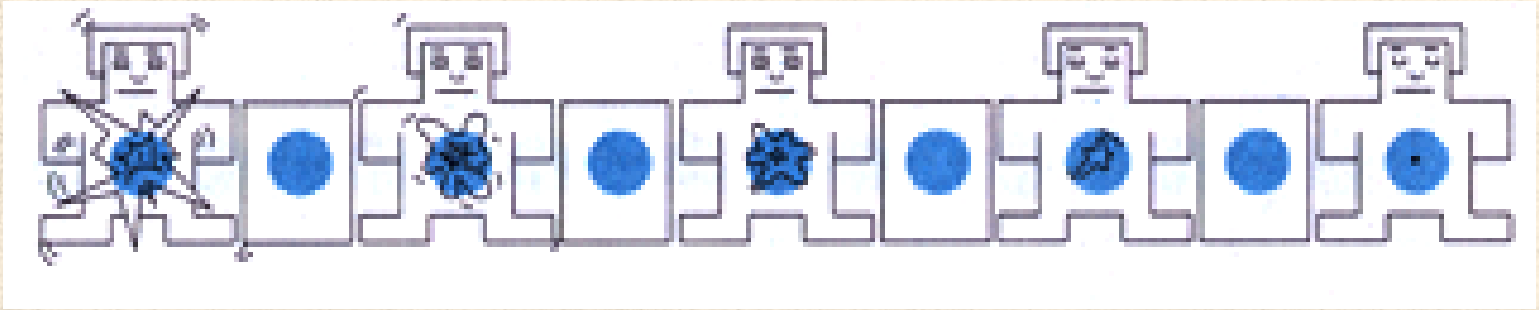
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

1999 ANEW study—three 1–9 scales: [4]

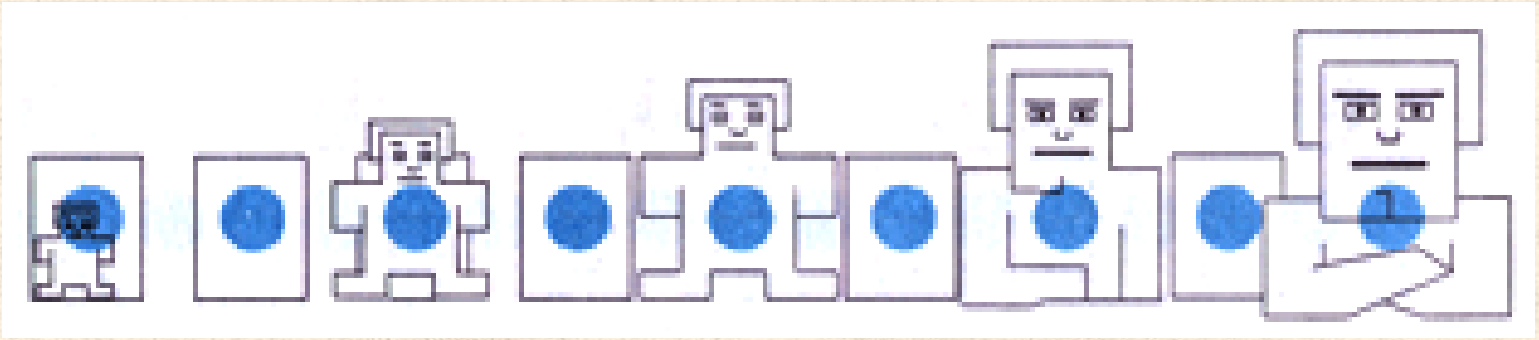
valence:



arousal:



dominance:



Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

ANEW study: Valence ∼ Happiness:

- Valence scale presented to participants as a 'happy-unhappy scale.'
- Participants were further told:

  "At one extreme of this scale, you are happy, pleased, satisfied, contented, hopeful. ...

  The other end of the scale is when you feel completely unhappy, annoyed, unsatisfied, melancholic, despaired, or bored."
- The Hedonometer was always about essential meaning.

We now know that ANEW is a no-no:

- Problem: Expert-chosen list of ∼ 1,000 words.
- Fine words but poorly cover real texts [16].
- Wrongly suggests Arousal and Dominance are minimal relative to Valence.

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

Remeasuring meaning:

"Obtaining Reliable human ratings of valence, arousal, and dominance for 20,000 English words"

Saif M. Mohammad,
Proceedings of The Annual Conference of the Association for Computational Linguistics (ACL), **38**, , 2018. [10]

Moving beyond Likert scales:

- Best-worst scaling
- Ask raters to examine n things once, and choose the best and worst according to some criterion.
- For $n = 4$, the are 6 pair comparisons of Things.
- Choosing best and worst gives 5 orderings: $\tau_1 > \tau_2, \tau_3 > \tau_4$.
- Things end up with scores in $[0, 1]$.

The PoCSverse
Meaning
19 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

NRC VAD Lexicon [10]

VAD endpoints:	Paradigm words and phrases presented to raters: [11]
highest valence	happiness, pleasure, positiveness, satisfaction, contentedness, hopefulness
lowest valence	unhappiness, annoyance, negativeness, dissatisfaction, melancholy, despair
highest arousal	arousal, activeness, stimulation, frenzy, jitteriness, alertness
lowest arousal	unarousal, passiveness, relaxation, calmness, sluggishness, dullness, sleepiness
highest dominance	dominant, in control of the situation, powerful, influential, important, autonomous
lowest dominance	submissive, controlled by outside factors, weak, influenced, cared-for, guided

Major problem 5: Imposing dimensions through clouds of endpoint descriptors.

NRC VAD study: 20,007 words:

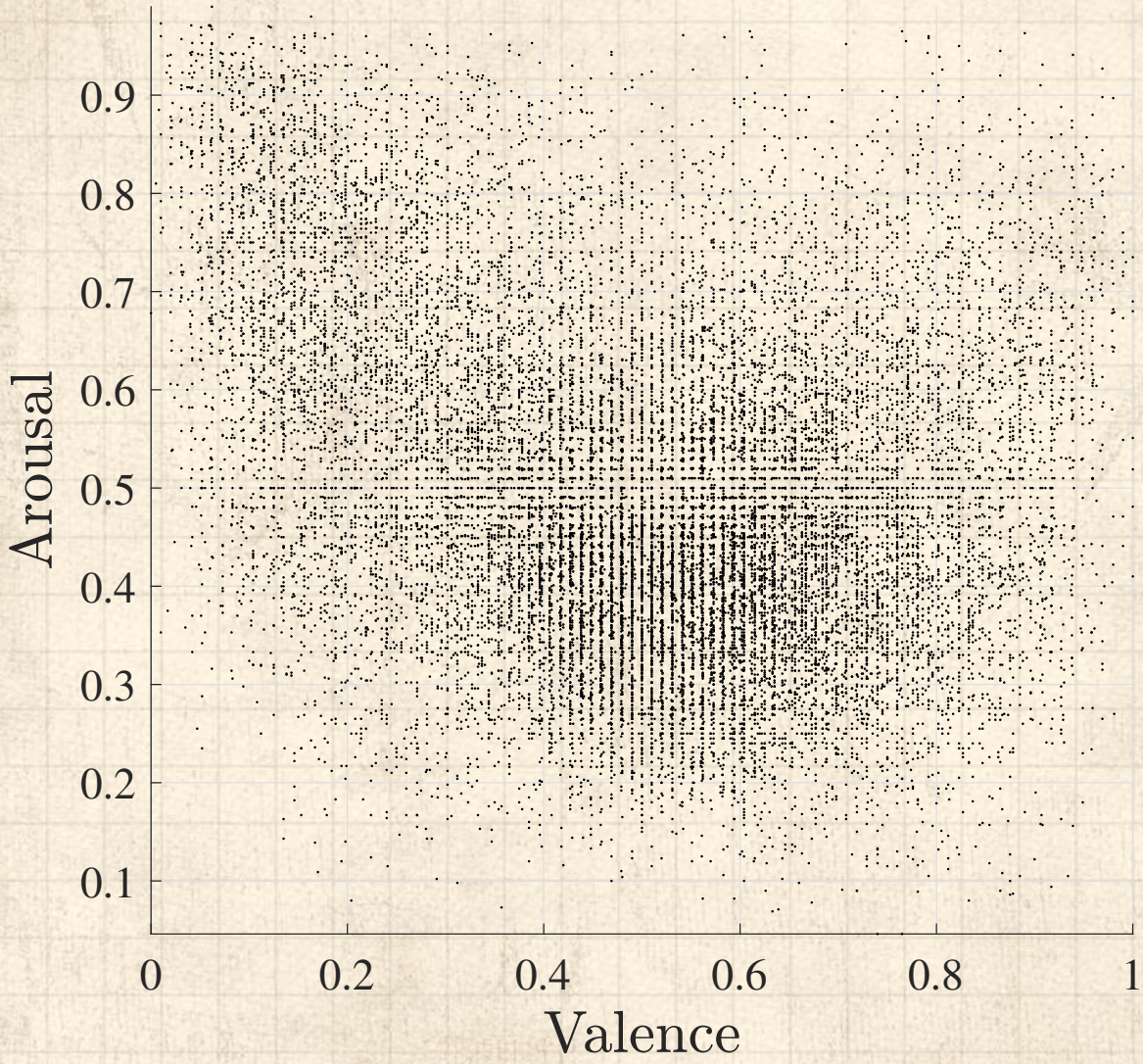
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

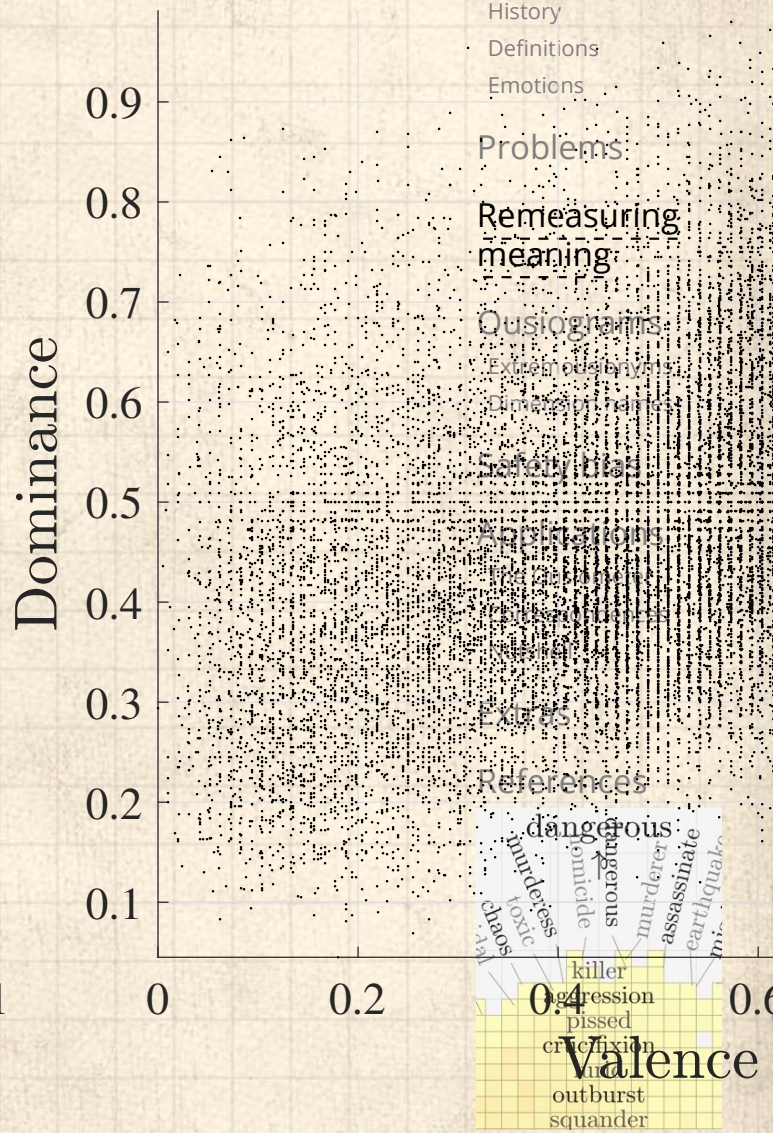
Standard correlations suggests a bit of Barney Rubble:

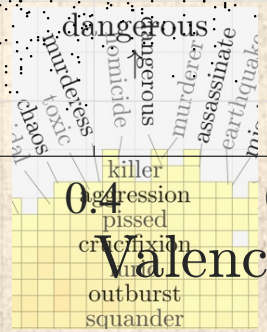
$$R(V, A) \simeq -0.268$$
$$R(A, D) \simeq 0.302$$
$$R(D, V) \simeq 0.488$$

The Delicious English Muffin of Meaning:[1]

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Abbreviations
Extras
References

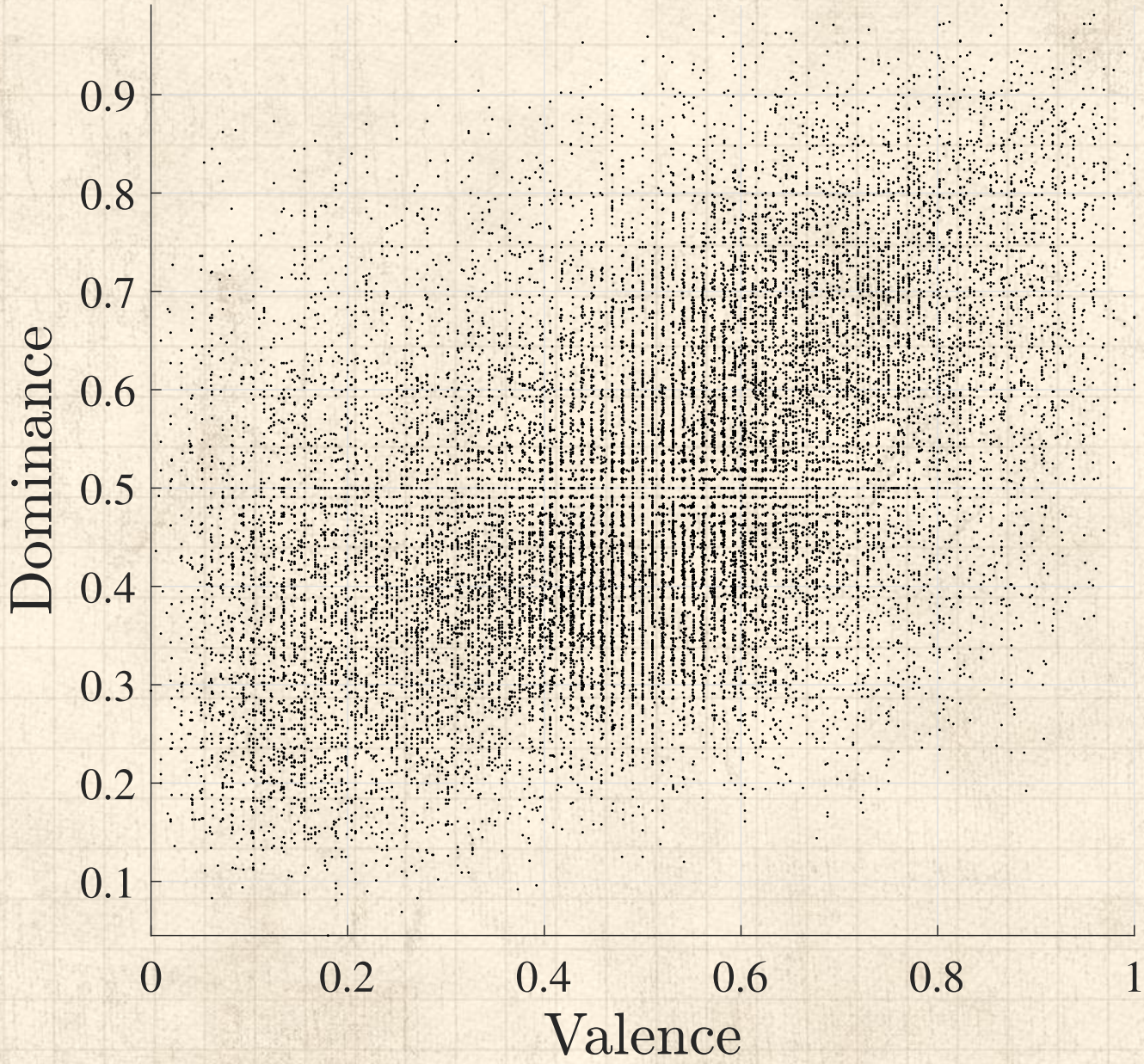






[1] Apricot jam, always.

$R(D,V) \simeq 0.488$



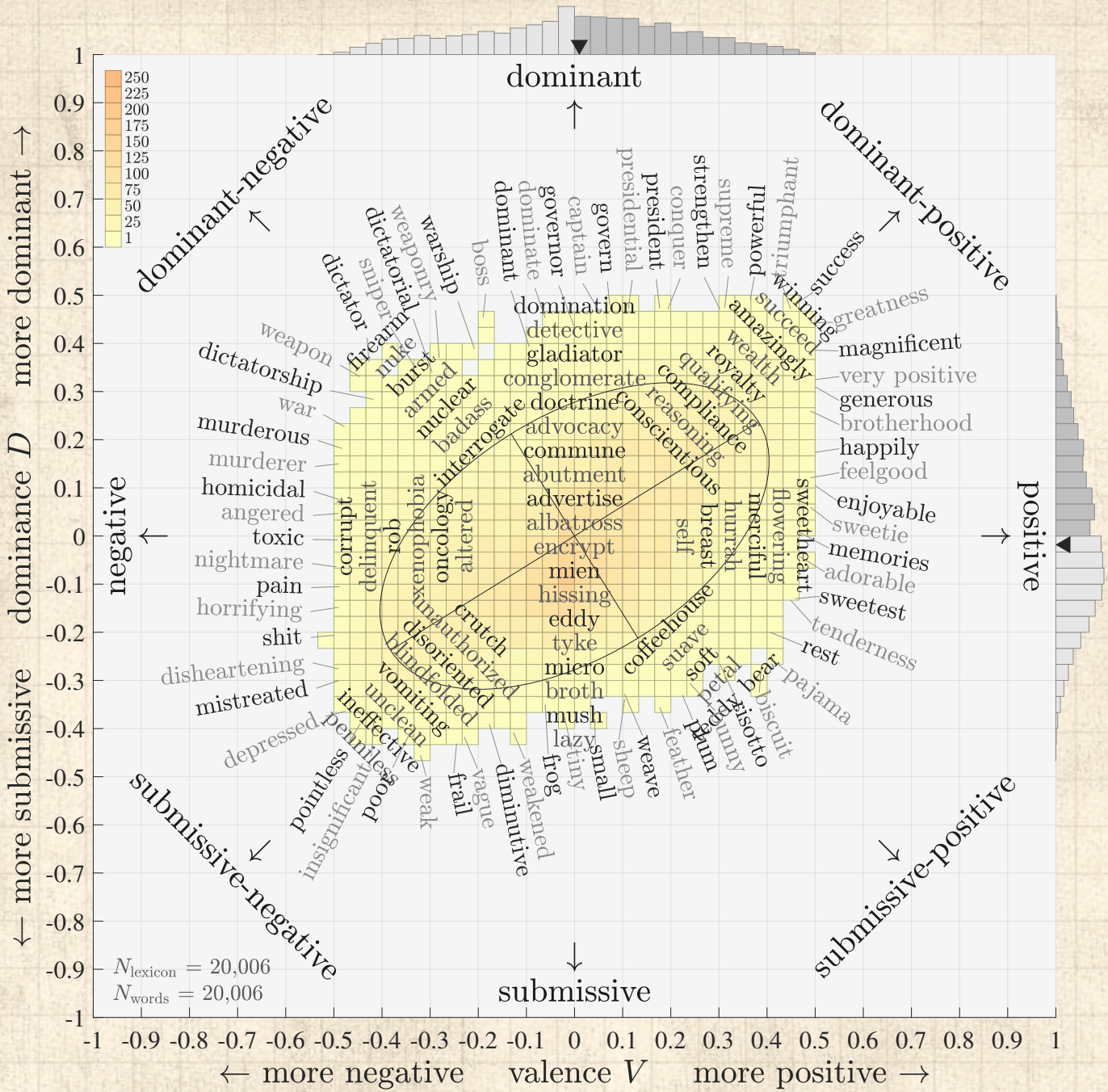
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

Release the Hounds by which we mean Singular Value Decomposition:

Variance explained:

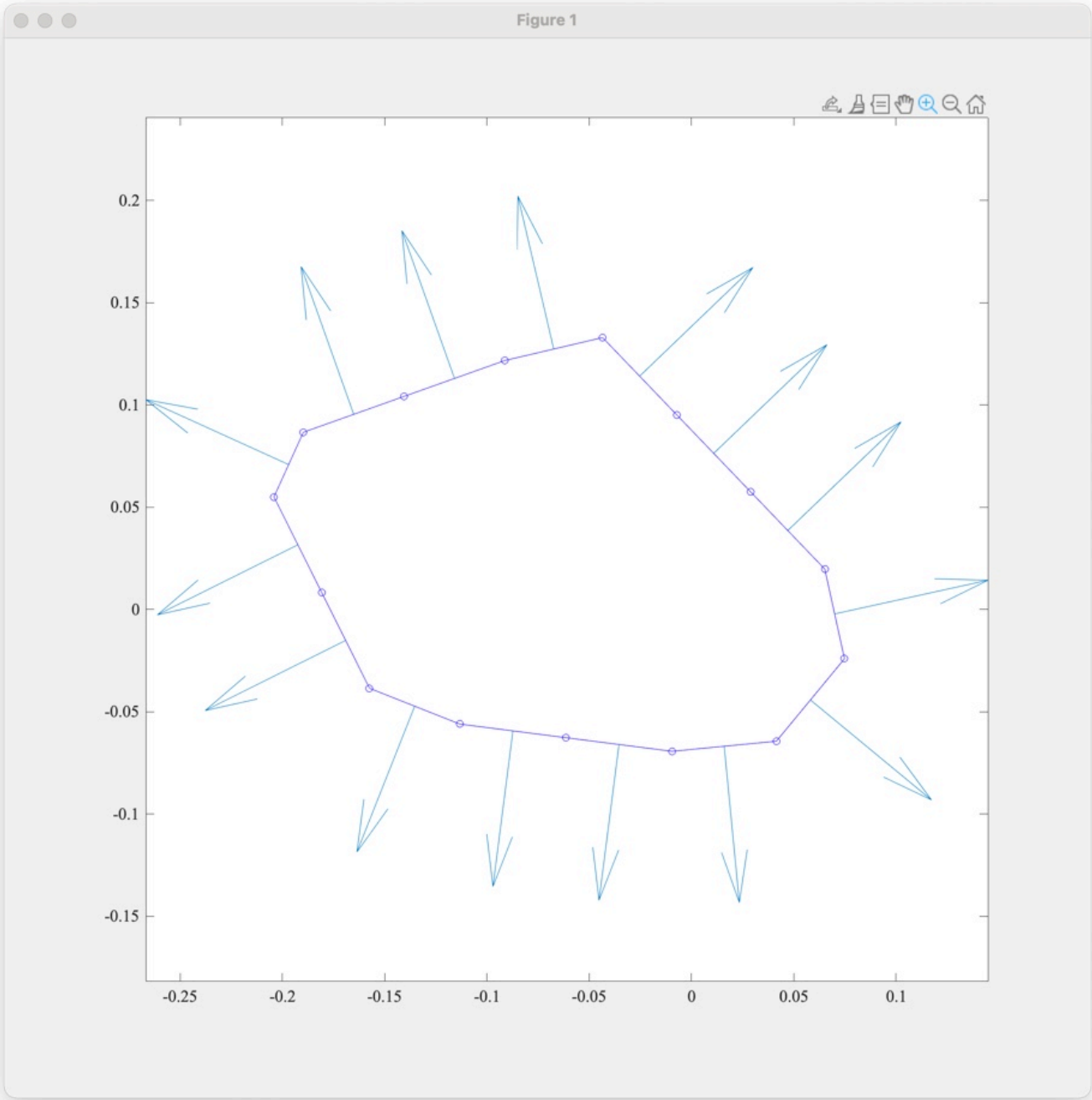
- VAD: 44.4%, 28.0%, and 27.6%.
- Apply SVD.
- Singular values: $\sigma_1 \simeq 34.1$, $\sigma_2 \simeq 27.2$, and $\sigma_3 \simeq 13.8$,
- For what will be Goodness-Energy-Structure (GES): 55.6%, 35.3%, and 9.1%
- Rotate in G-E plane by $\pi/4$ for what will be Power-Danger-Structure (PDS) 45.5%, 45.5%, 9.1%
- Interpretability enhancements: Ousiograms.

The PoCSverse
Meaning
24 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References



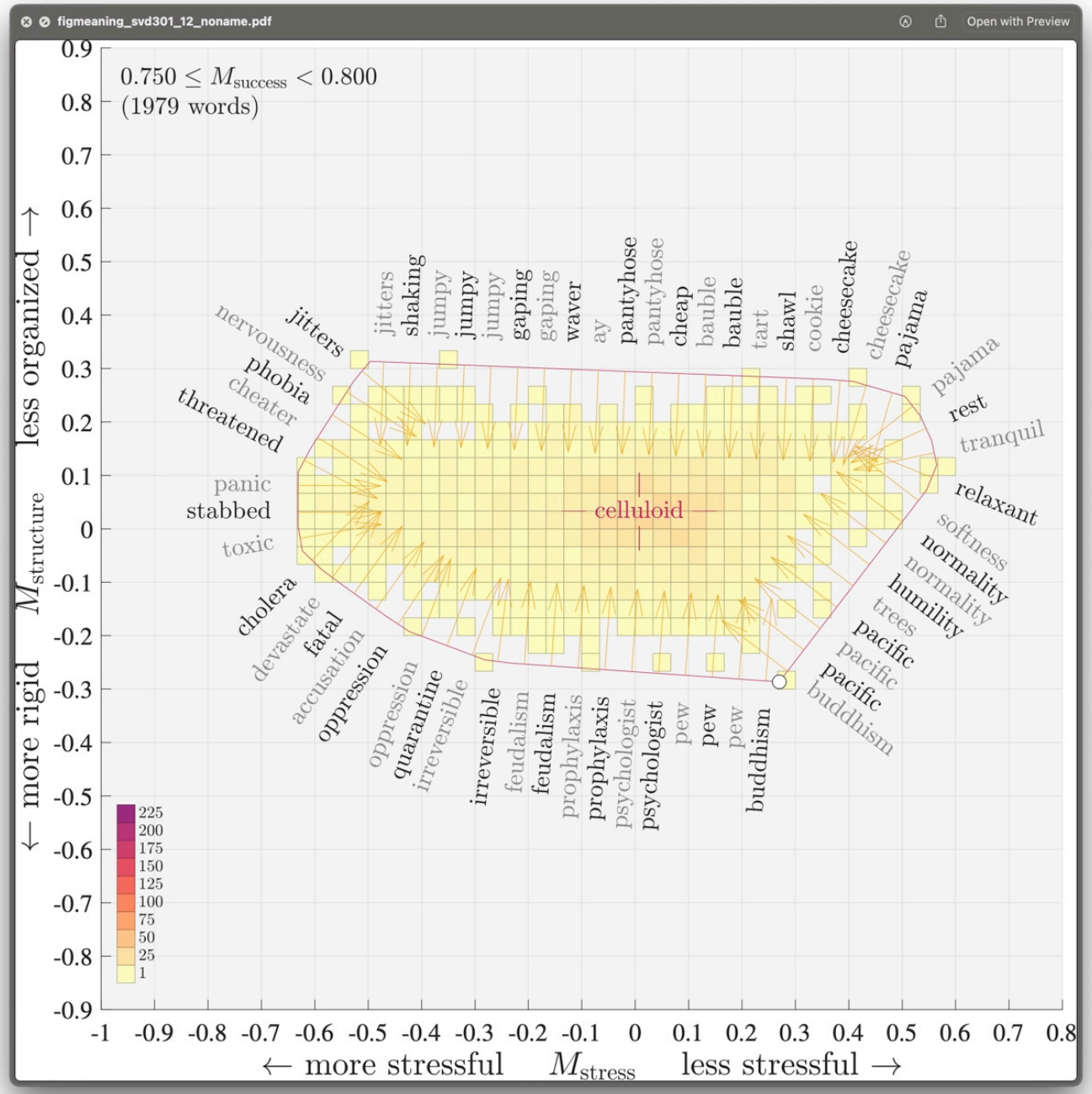
The PoCSverse
Meaning
25 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

Building ousiograms (2021/01/31):



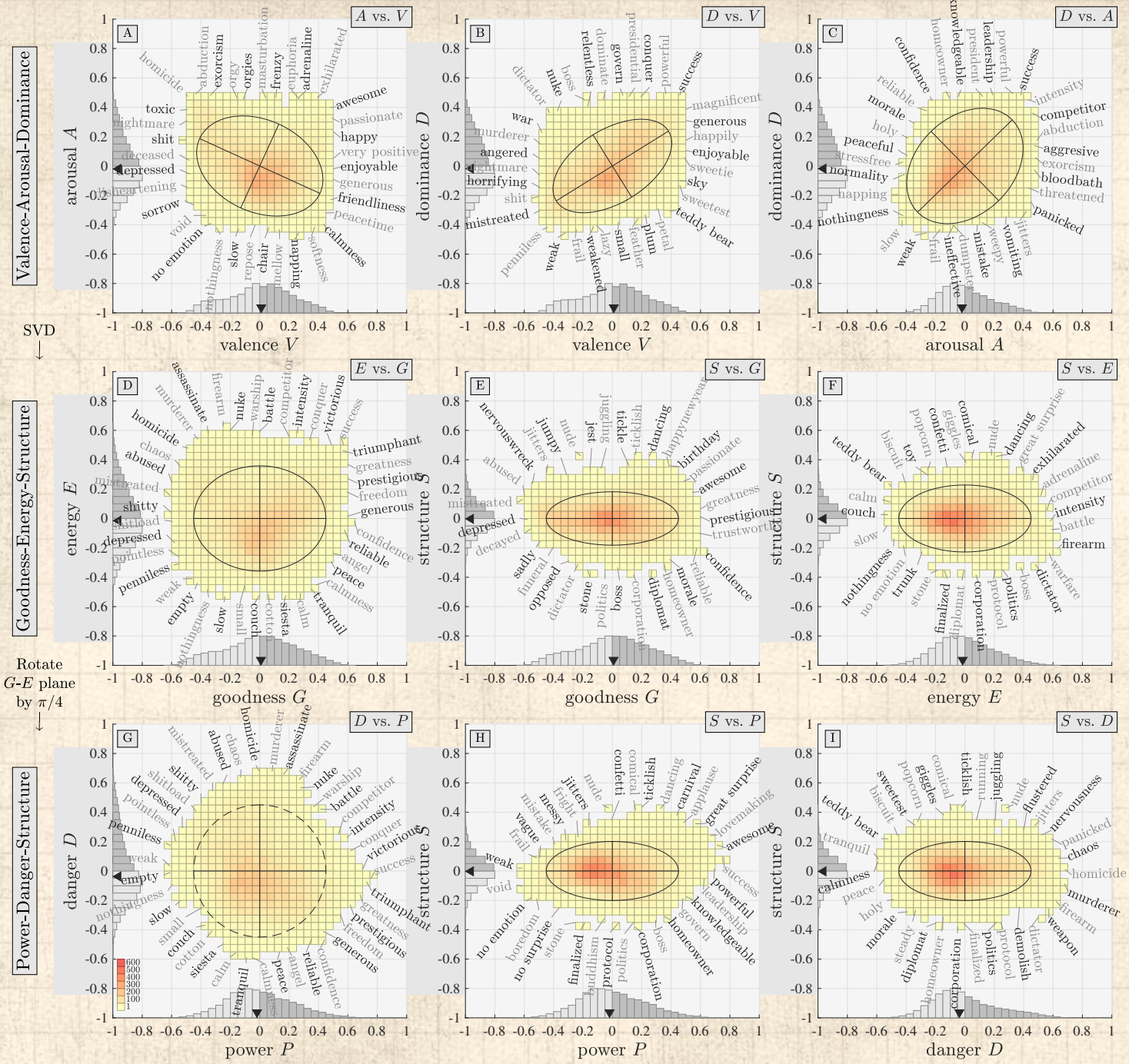
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

Building ousiograms (2021/01/31):



The PoCSverse
Meaning
27 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

Ousiograms for the NRC VAD lexicon in the VAD, GES, and PDS frameworks:



The PoCSverse
Meaning
28 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

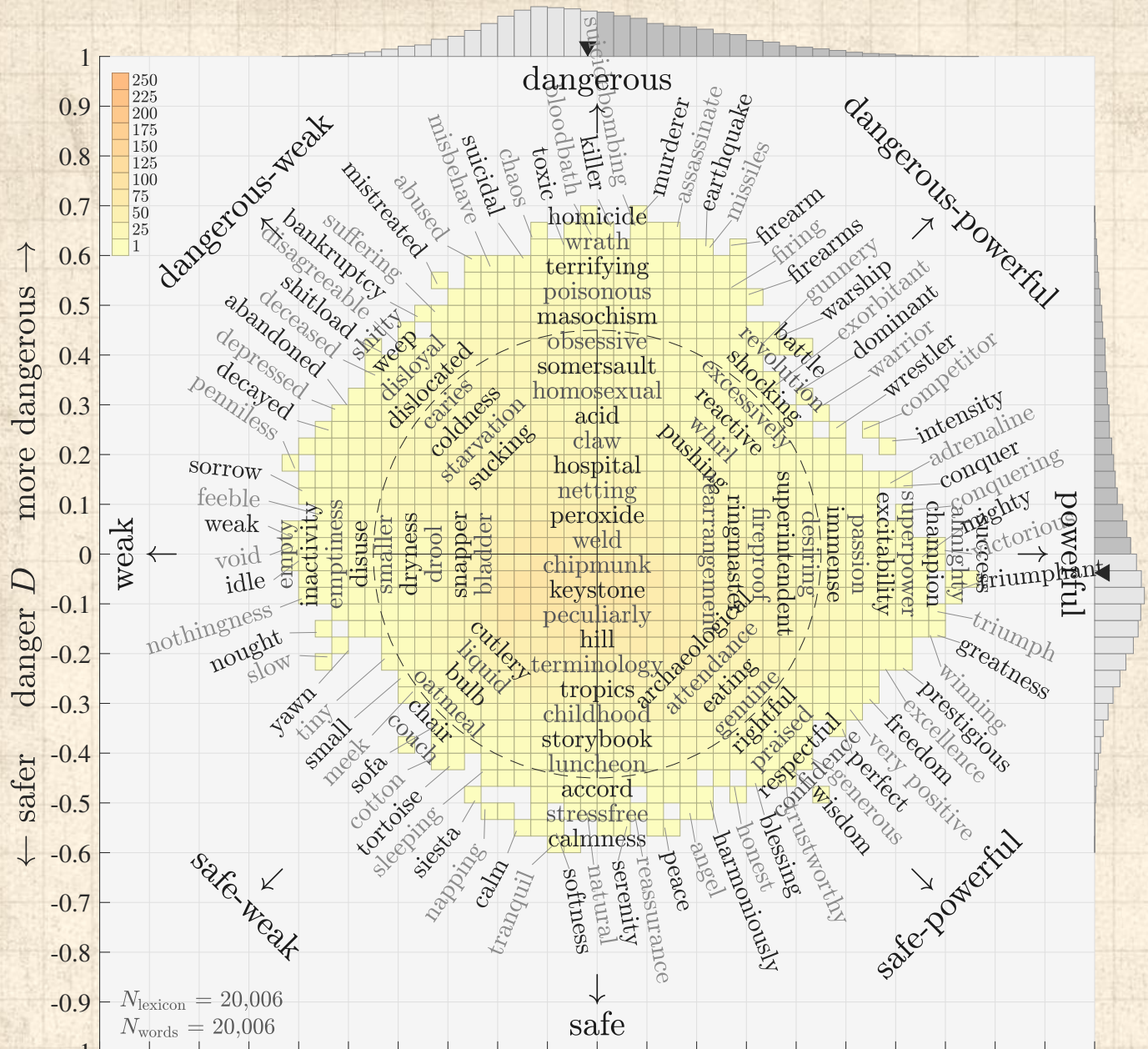
Ousiograms
- Extremousionyms
- Dimension names

Safety bias

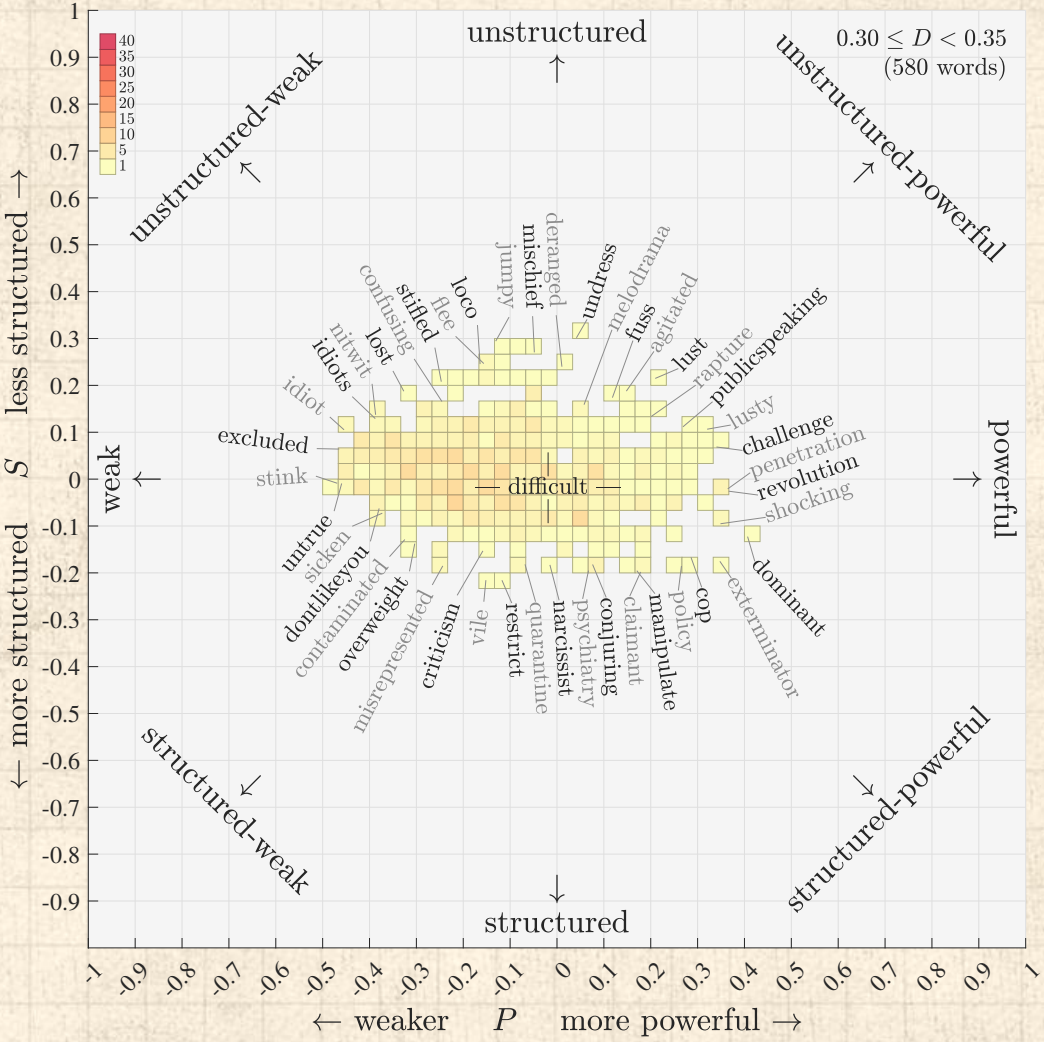
Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References


~ power-danger ousiogram for the NRC VAD lexicon ~
dangerous
safe
weak
powerful
dangerous-weak
dangerous-powerful
safe-weak
safe-powerful
← safer danger D more dangerous →
← weaker power P more powerful →
N_lexicon = 20,006
N_words = 20,006
250
225
200
175
150
125
100
75
50
25
1
homicide
wrath
terrifying
poisonous
masochism
obsessive
somersault
homosexual
acid
claw
hospital
netting
peroxide
weld
chipmunk
keystone
peculiarly
hill
terminology
tropics
childhood
storybook
luncheon
accord
stressfree
calmness
killer
suicidal
toxic
bloodbath
suicidebombing
murderer
assassinate
earthquake
missiles
firearm
firing
firearms
gunnery
warship
exorbitant
dominant
warrior
wrestler
competitor
intensity
adrenaline
conquer
conquering
mighty
victorious
triumphant
triumph
greatness
prestigious
winning
excellence
freedom
very positive
perfect
wisdom
generous
confidence
trustworthy
blessing
honest
harmoniously
angel
peace
reassurance
serenity
natural
softness
tranquil
calm
napping
siesta
sleeping
tortoise
cotton
sofa
meek
small
tiny
yawn
chair
couch
oatmeal
bulb
liquid
cutlery
slow
nought
nothingness
idle
void
weak
sorrow
feeble
penniless
empty
inactivity
emptiness
disuse
smaller
dryness
drool
snapper
bladder
sucking
starvation
coldness
caries
dislocated
disloyal
weep
shitload
shitty
disagreeable
deceased
abandoned
depressed
decayed
bankruptcy
suffering
mistreated
misbehave
abused
suicidal
chaos

Ousiometric slices:



Slices of Structure Flipbook

Slices of Danger Flipbook

Slices of Power Flipbook

Extremonyms: Synousionyms and Antousionyms:

Powerful-Safe (Good) to Weak-Dangerous (Bad) axis:

Synousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
Anchor: wisdom	0.430	-0.198	0.371	0.579	-0.031	-0.158	0.388	-0.432	-0.158
education	0.396	-0.225	0.340	0.539	-0.065	-0.167	0.336	-0.427	-0.167
healthy	0.438	-0.181	0.318	0.558	-0.047	-0.108	0.362	-0.428	-0.108
trustworthy	0.469	-0.185	0.324	0.589	-0.052	-0.100	0.379	-0.453	-0.100
reliable	0.412	-0.259	0.375	0.575	-0.076	-0.202	0.353	-0.460	-0.202
Antousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
bullshit	-0.458	0.176	-0.317	-0.575	0.046	0.095	-0.373	0.439	0.095
shitty	-0.480	0.179	-0.337	-0.604	0.042	0.100	-0.397	0.456	0.100
nauseate	-0.438	0.160	-0.324	-0.558	0.026	0.101	-0.376	0.413	0.101
weeping	-0.418	0.188	-0.332	-0.549	0.042	0.131	-0.359	0.418	0.131
shame	-0.440	0.170	-0.345	-0.572	0.023	0.120	-0.388	0.421	0.120
diarrhea	-0.408	0.184	-0.357	-0.552	0.023	0.151	-0.374	0.407	0.151

Powerful to Weak axis:

Synousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
Anchor: success	0.459	0.380	0.481	0.571	0.501	0.095	0.758	-0.050	0.095
almighty	0.438	0.374	0.458	0.543	0.487	0.098	0.728	-0.040	0.098
triumphant	0.449	0.337	0.472	0.565	0.462	0.073	0.726	-0.072	0.073
champion	0.390	0.380	0.445	0.494	0.492	0.087	0.698	-0.001	0.087
victorious	0.384	0.386	0.446	0.489	0.499	0.087	0.698	0.007	0.087
Antousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
sorrow	-0.448	-0.265	-0.336	-0.509	-0.329	-0.127	-0.593	0.127	-0.127
tasteless	-0.354	-0.304	-0.352	-0.430	-0.385	-0.092	-0.576	0.032	-0.092
idle	-0.321	-0.333	-0.388	-0.414	-0.434	-0.068	-0.600	-0.014	-0.068
empty	-0.312	-0.317	-0.419	-0.424	-0.439	-0.033	-0.610	-0.011	-0.033
void	-0.365	-0.337	-0.370	-0.443	-0.420	-0.103	-0.611	0.016	-0.103

Extremonyms: Synousionyms and Antousionyms:

Dangerous-Powerful (High Energy) to Safe-Weak (Low Energy) axis:

Synousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
Anchor: volcanic	-0.156	0.410	0.281	-0.061	0.515	-0.045	0.322	0.407	-0.045
shelling	-0.163	0.417	0.273	-0.072	0.518	-0.039	0.316	0.417	-0.039
artillery	-0.150	0.412	0.294	-0.050	0.523	-0.050	0.335	0.405	-0.050
wild	-0.188	0.422	0.250	-0.105	0.514	-0.032	0.289	0.438	-0.032
rifles	-0.163	0.364	0.265	-0.068	0.470	-0.062	0.284	0.380	-0.062
Antousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
couch	0.094	-0.418	-0.302	-0.002	-0.524	0.025	-0.372	-0.369	0.025
mellow	0.133	-0.431	-0.235	0.066	-0.504	-0.009	-0.310	-0.403	-0.009
pillow	0.163	-0.372	-0.305	0.049	-0.498	0.085	-0.317	-0.387	0.085
tortoise	0.173	-0.422	-0.250	0.092	-0.511	0.025	-0.297	-0.427	0.025
quilt	0.143	-0.377	-0.274	0.048	-0.482	0.052	-0.307	-0.375	0.052
cotton	0.139	-0.429	-0.260	0.059	-0.517	0.012	-0.324	-0.407	0.012

Dangerous to Safe axis:

Synousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
Anchor: homicide	-0.490	0.473	0.018	-0.485	0.478	0.011	-0.005	0.681	0.011
killer	-0.459	0.471	0.043	-0.446	0.485	0.008	0.028	0.658	0.008
psychopath	-0.460	0.443	0.036	-0.446	0.458	-0.003	0.009	0.640	-0.003
bloodshed	-0.452	0.442	0.025	-0.444	0.450	0.008	0.004	0.633	0.008
violate	-0.439	0.470	0.019	-0.440	0.468	0.033	0.020	0.642	0.033
Antousionyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
natural	0.354	-0.382	-0.019	0.354	-0.382	-0.026	-0.020	-0.520	-0.026
tranquil	0.417	-0.406	-0.145	0.351	-0.480	0.078	-0.091	-0.588	0.078
softness	0.375	-0.414	-0.098	0.338	-0.455	0.021	-0.082	-0.561	0.021
serenity	0.400	-0.378	0.057	0.429	-0.345	-0.054	0.060	-0.547	-0.054
comfortable	0.427	-0.337	-0.027	0.406	-0.361	0.039	0.032	-0.542	0.039
calmness	0.434	-0.395	-0.106	0.383	-0.453	0.065	-0.049	-0.591	0.065

Etymological, taxonomic, and nomenclatural madnesses:

- Physics: Power was once sometimes called Activity
- Danger and Dominance trace back to Dominus (∼ lord/ruler/person of power)
- Framing words for EPA, VAD, etc., matter greatly.

Other descriptors that don't hold up:

- Success-Stress-Structure.
- Energy/Flourishing/Thriving-Threat
- Power-Order/Chaos-Gravity/Seriousness

After much staring at the ceiling:

- Goodness-Energy-Structure (GES) (still fails)
- Power-Danger-Structure (PDS) (succeeds)

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

Connections between meaning dimensions:

$$\begin{bmatrix} \textbf{Goodness} \\ \textbf{Energy} \\ \textbf{Structure} \end{bmatrix} \simeq \begin{bmatrix} +0.86 & -0.15 & +0.48 \\ -0.16 & +0.83 & +0.54 \\ +0.48 & +0.55 & -0.69 \end{bmatrix} \begin{bmatrix} \textbf{Valence} \\ \textbf{Arousal} \\ \textbf{Dominance} \end{bmatrix}$$

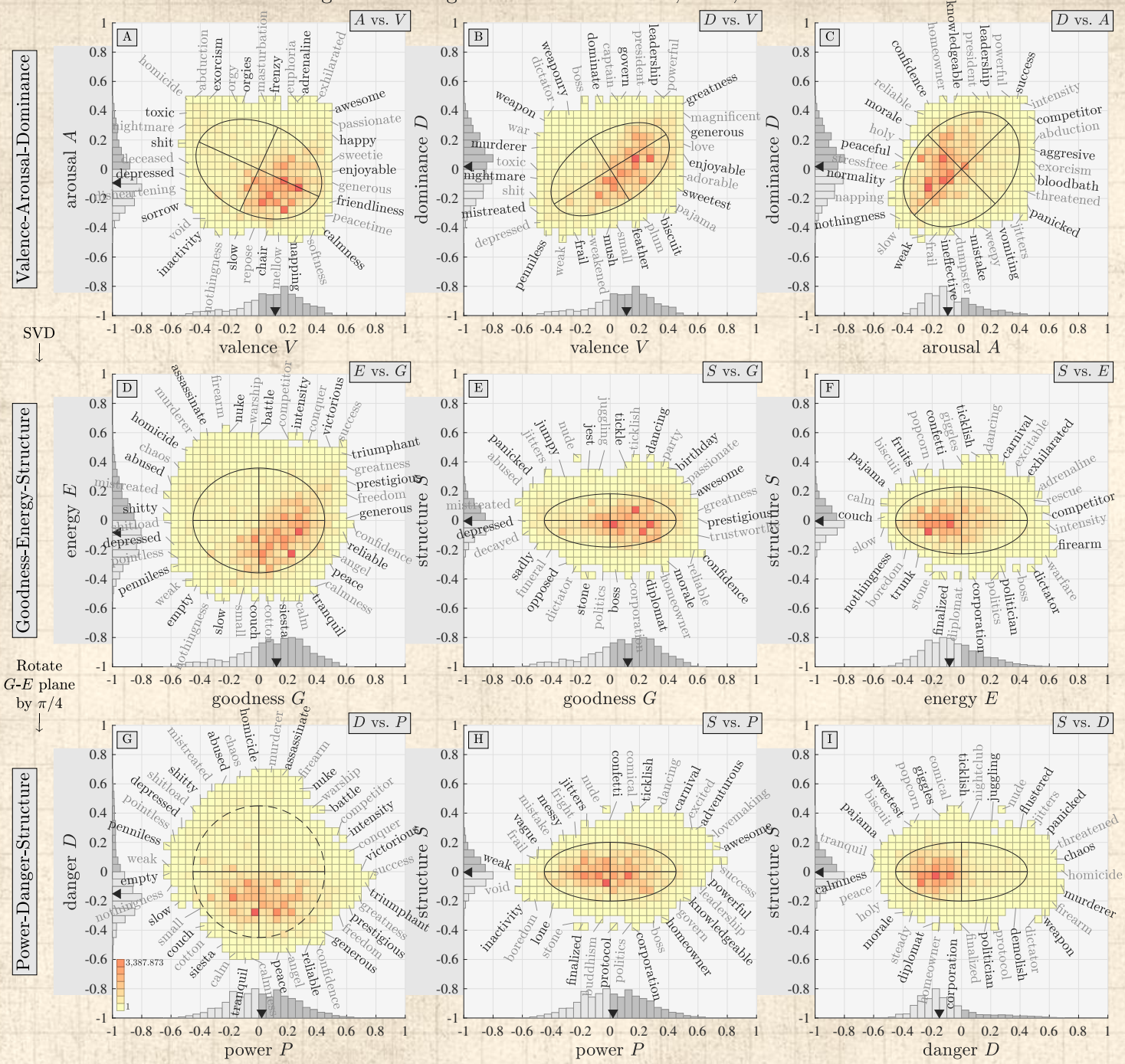
$$\begin{bmatrix} \textbf{Power} \\ \textbf{Danger} \\ \textbf{Structure} \end{bmatrix} \simeq \begin{bmatrix} 0.53 & 0.45 & 0.72 \\ -0.70 & 0.71 & 0.07 \\ 0.48 & 0.55 & -0.69 \end{bmatrix} \begin{bmatrix} \textbf{Valence} \\ \textbf{Arousal} \\ \textbf{Dominance} \end{bmatrix}$$

$$\begin{bmatrix} \textbf{Power} \\ \textbf{Danger} \end{bmatrix} = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} \textbf{Goodness} \\ \textbf{Energy} \end{bmatrix} \quad (1)$$

From types to tokens: [15, ?]

- Analysis so far is for a lexicon of types: Each word counts once.
- Must consider how words are used in real texts by frequency: Tokens.
- Rebuild ousiograms with usage frequency incorporated.
- A set of distinct corpora:
  - English fiction from Google Books (120 years). [9, 14]
  - Jane Austen's novels.
  - Sherlock Holmes stories.
  - New York Times (20 years). [19]
  - Wikipedia (2019/03). [20]
  - RadioTalk: Transcriptions of talk radio. [3]
  - Twitter through Storywrangler. [1]

The PoCSverse
Meaning
40 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References



The PoCSverse
Meaning
41 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

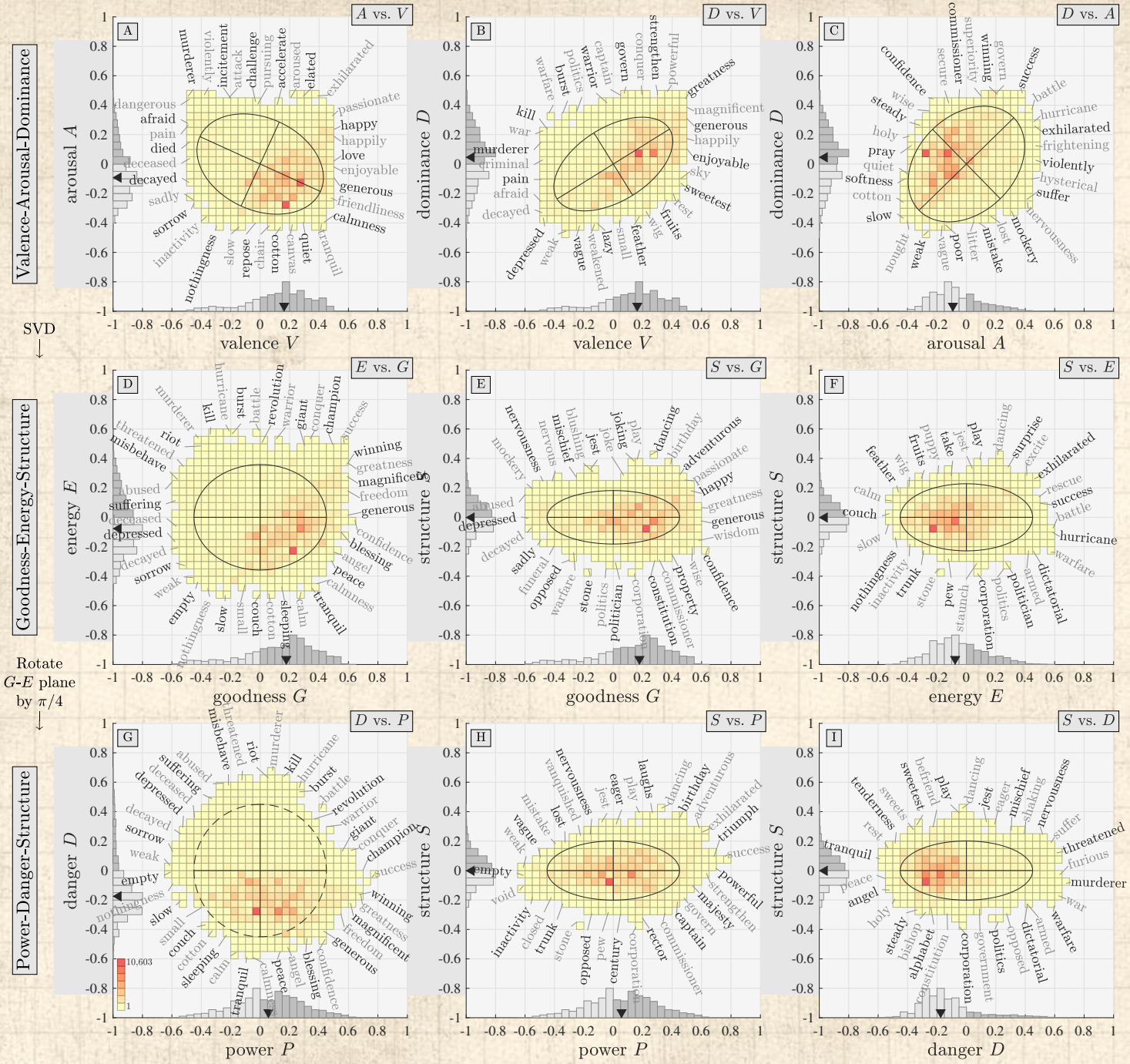
Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

Ousiograms for Jane Austen's novels in the VAD, GES, and PDS frameworks:



The PoCSverse
Meaning
42 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

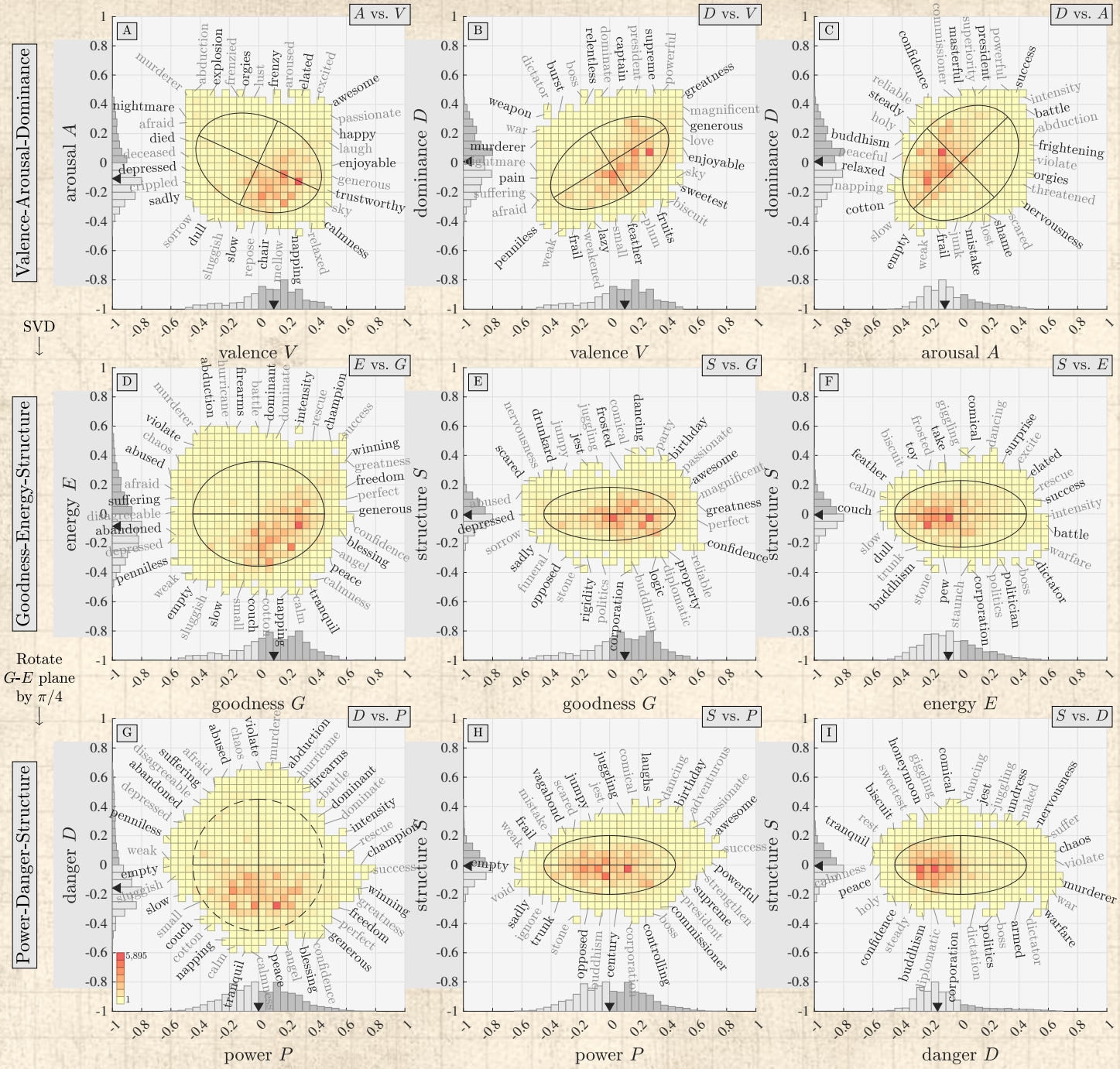
Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

Ousiograms for Sherlock Holmes in the VAD, GES, and PDS frameworks:



The PoCSverse
Meaning
43 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

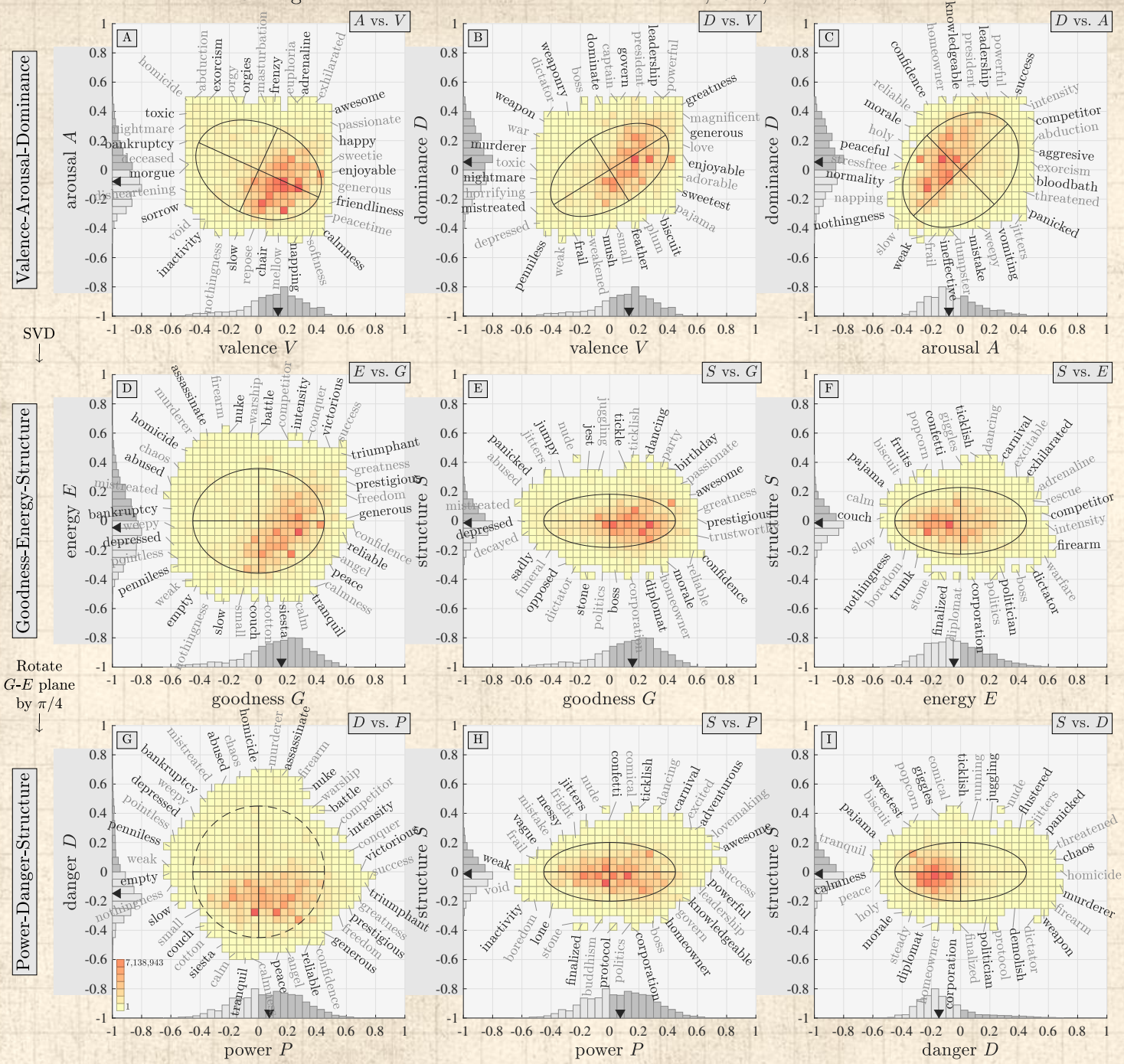
Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References



The PoCSverse
Meaning
44 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

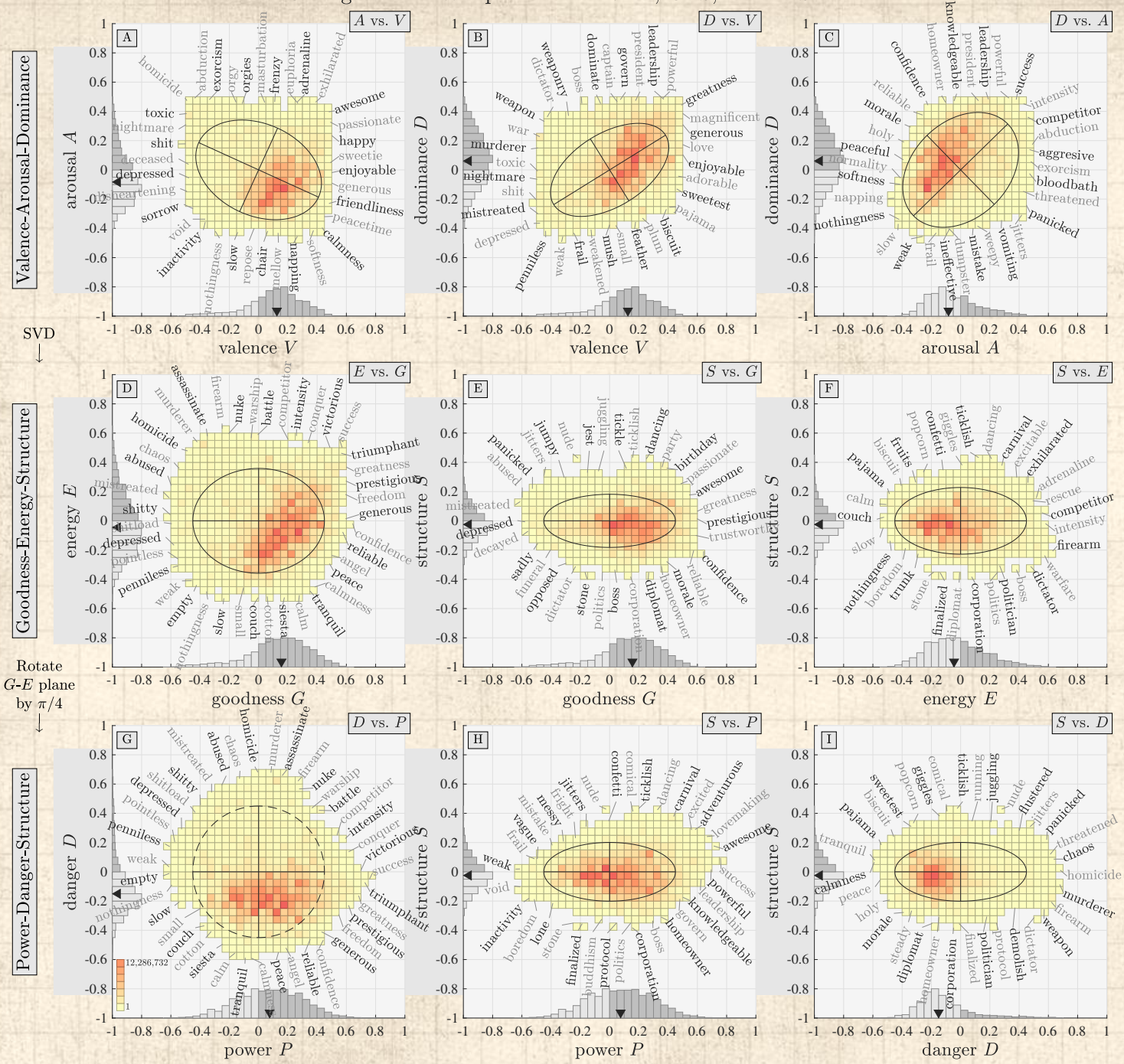
Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References



The PoCSverse
Meaning
45 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

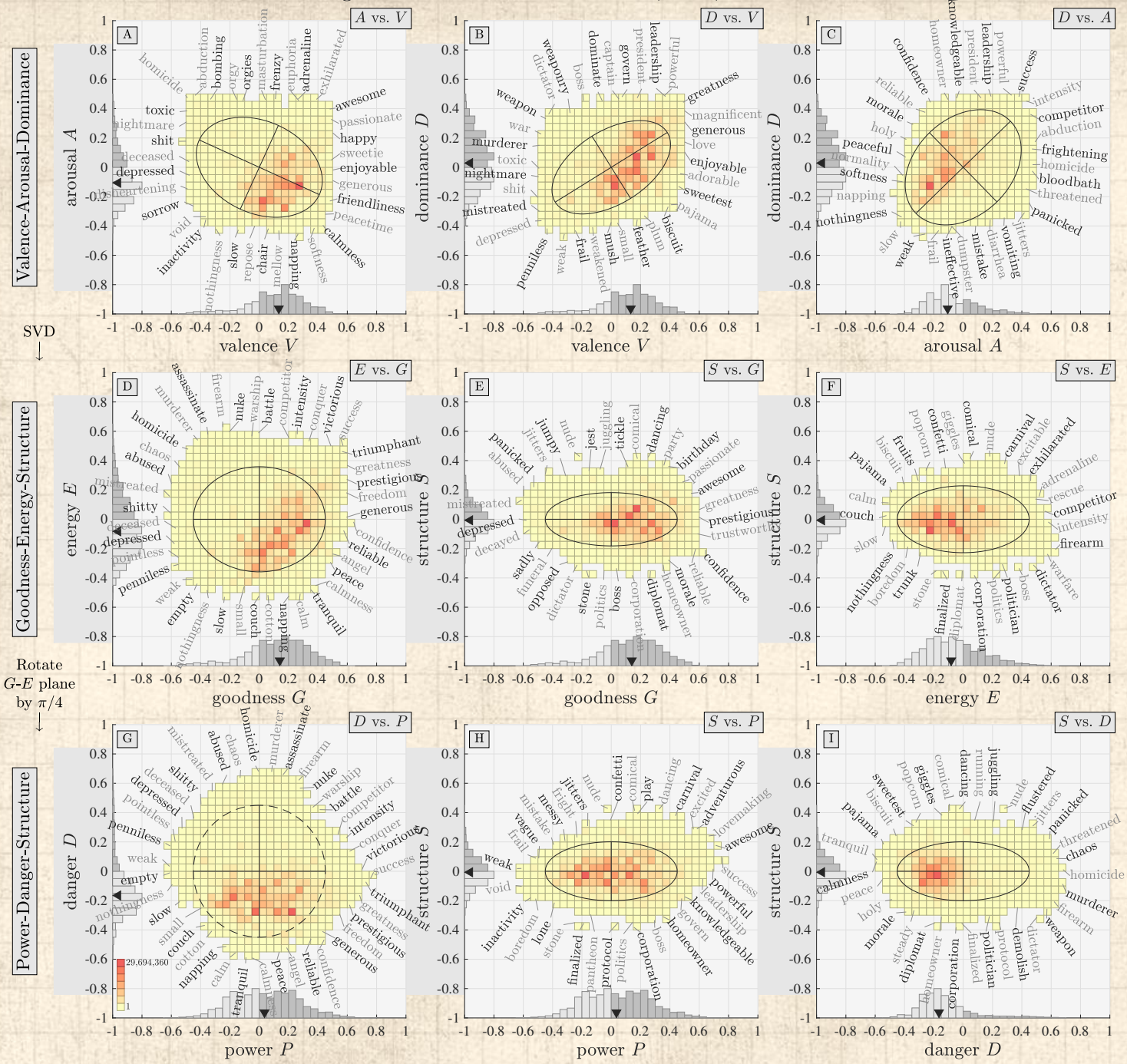
Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References



The PoCSverse
Meaning
46 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

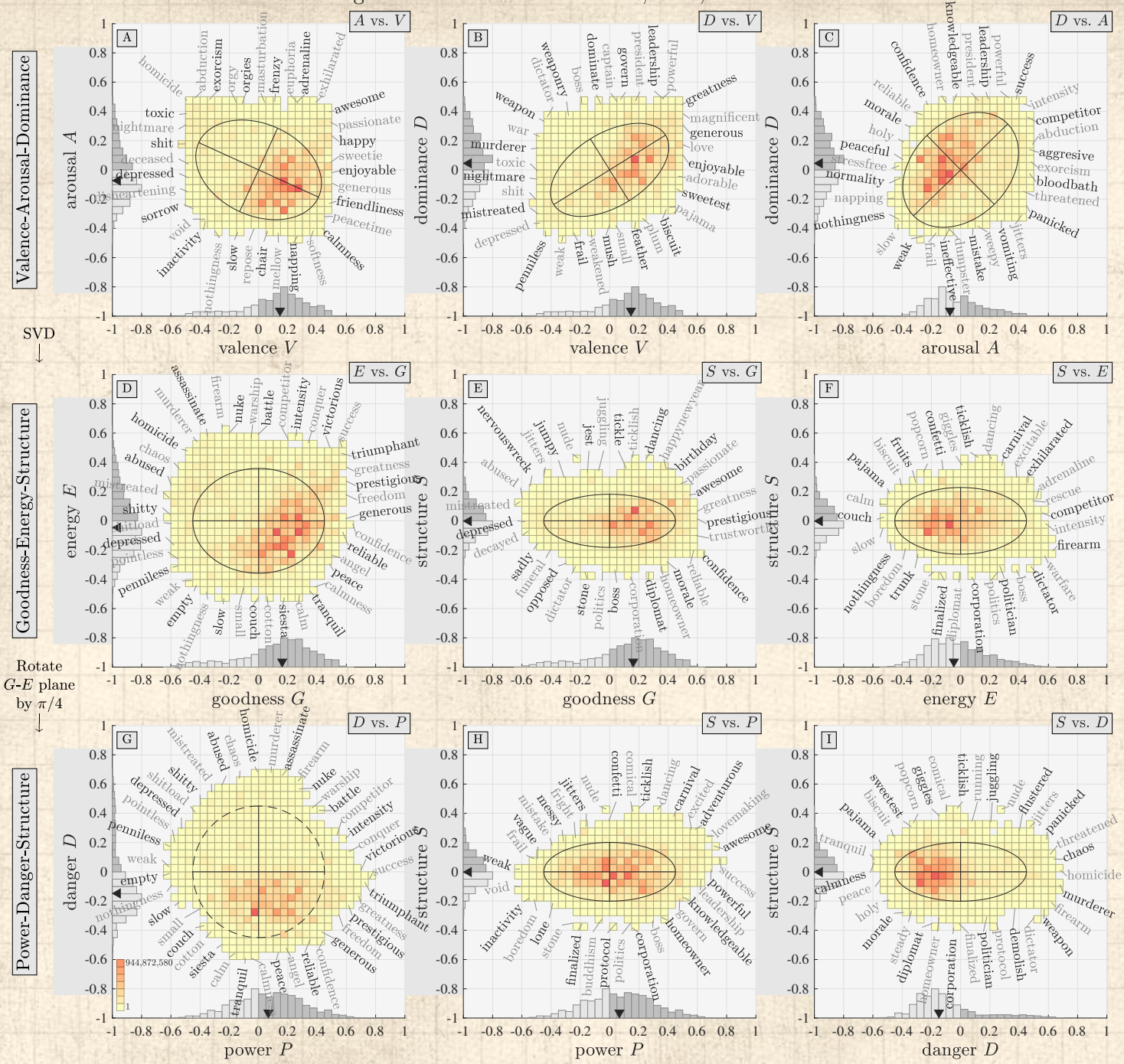
Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References



The PoCSverse
Meaning
47 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

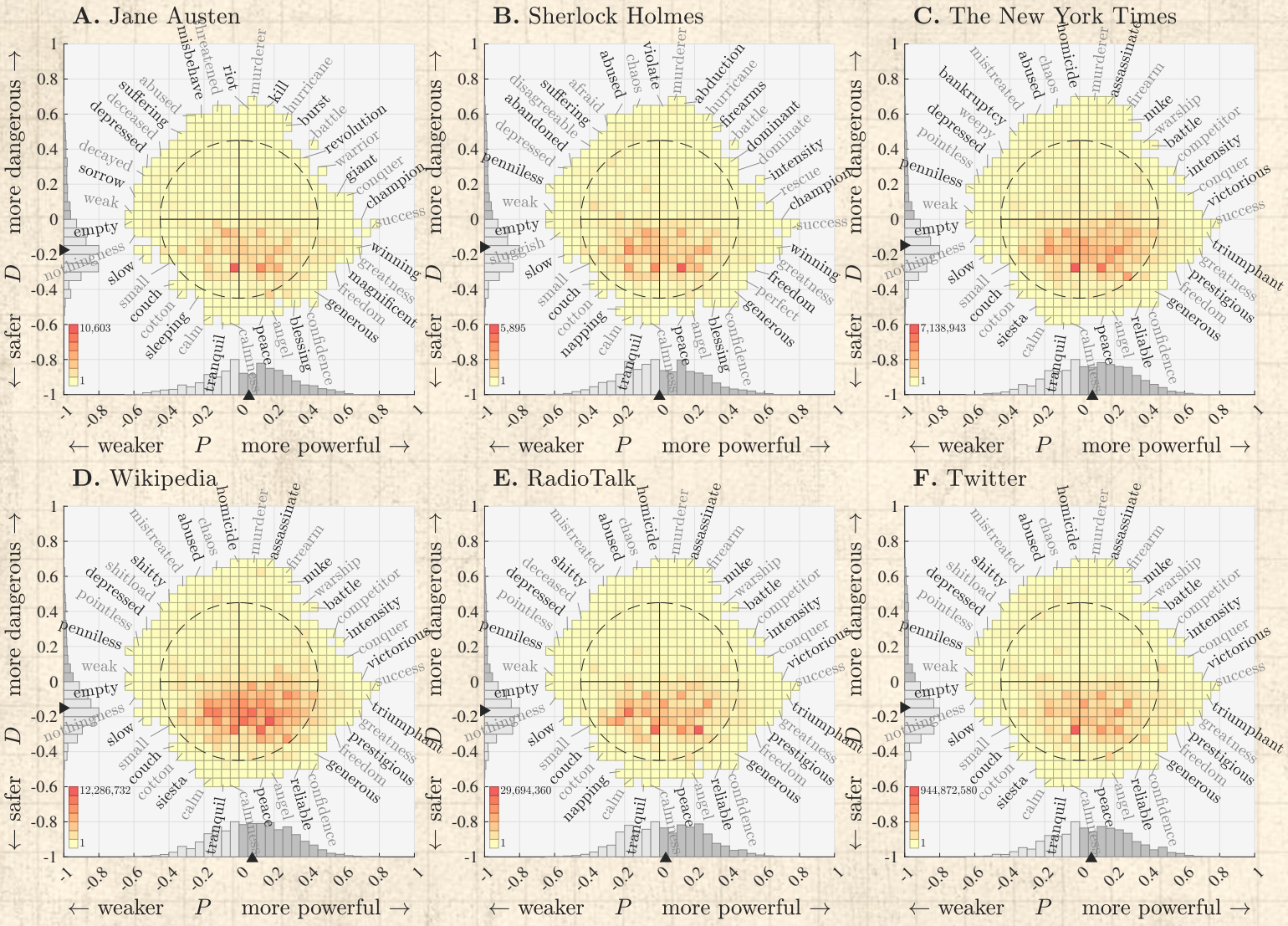
Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

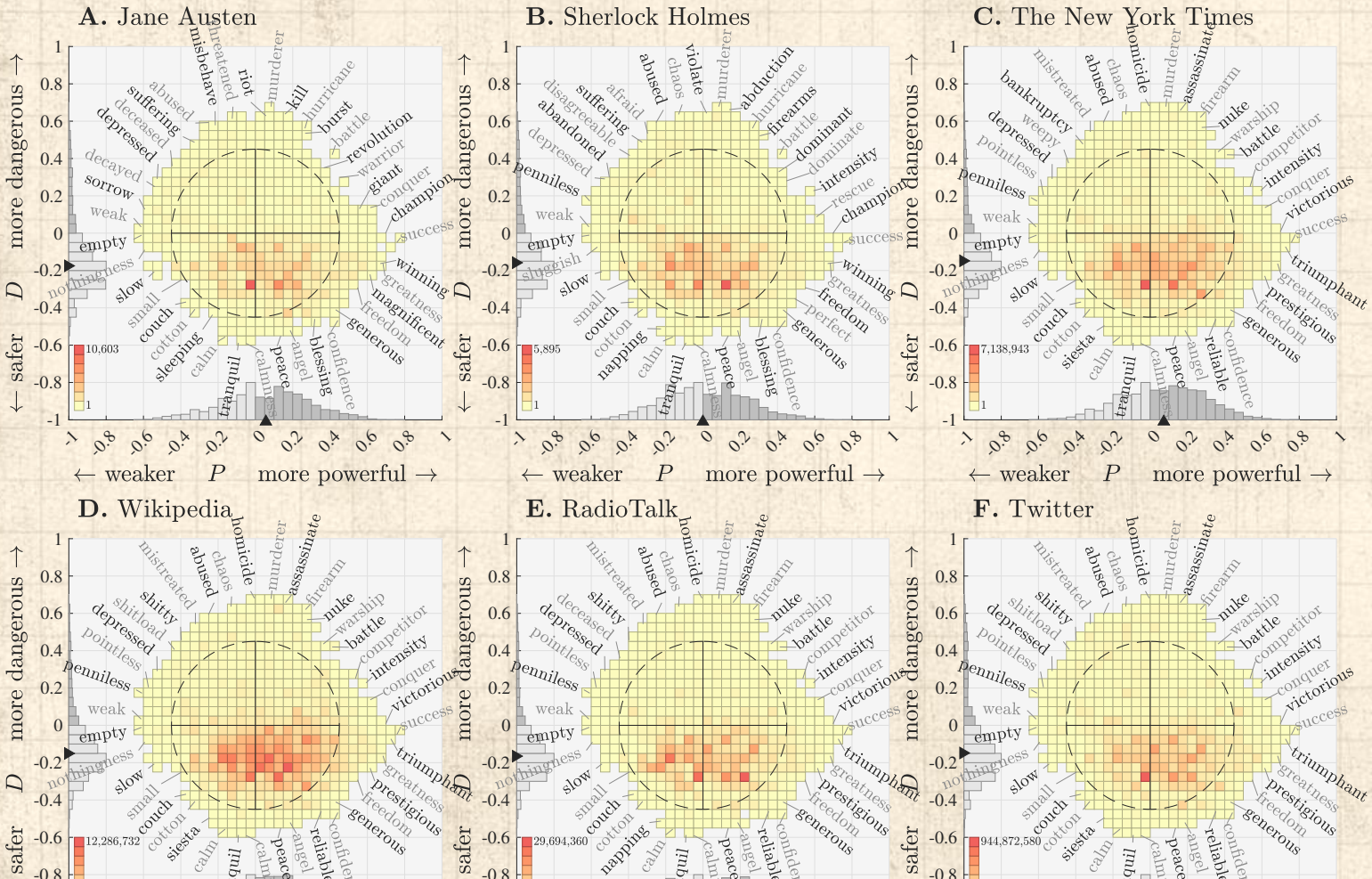
References

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References



A special thing has happened:

- The PDS framework emerged only from analyzing a lexicon (types).
- Applying PDS framework to disparate corpora (tokens) reveals a linguistic ‘safety bias’.



The PoCSverse
Meaning
49 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

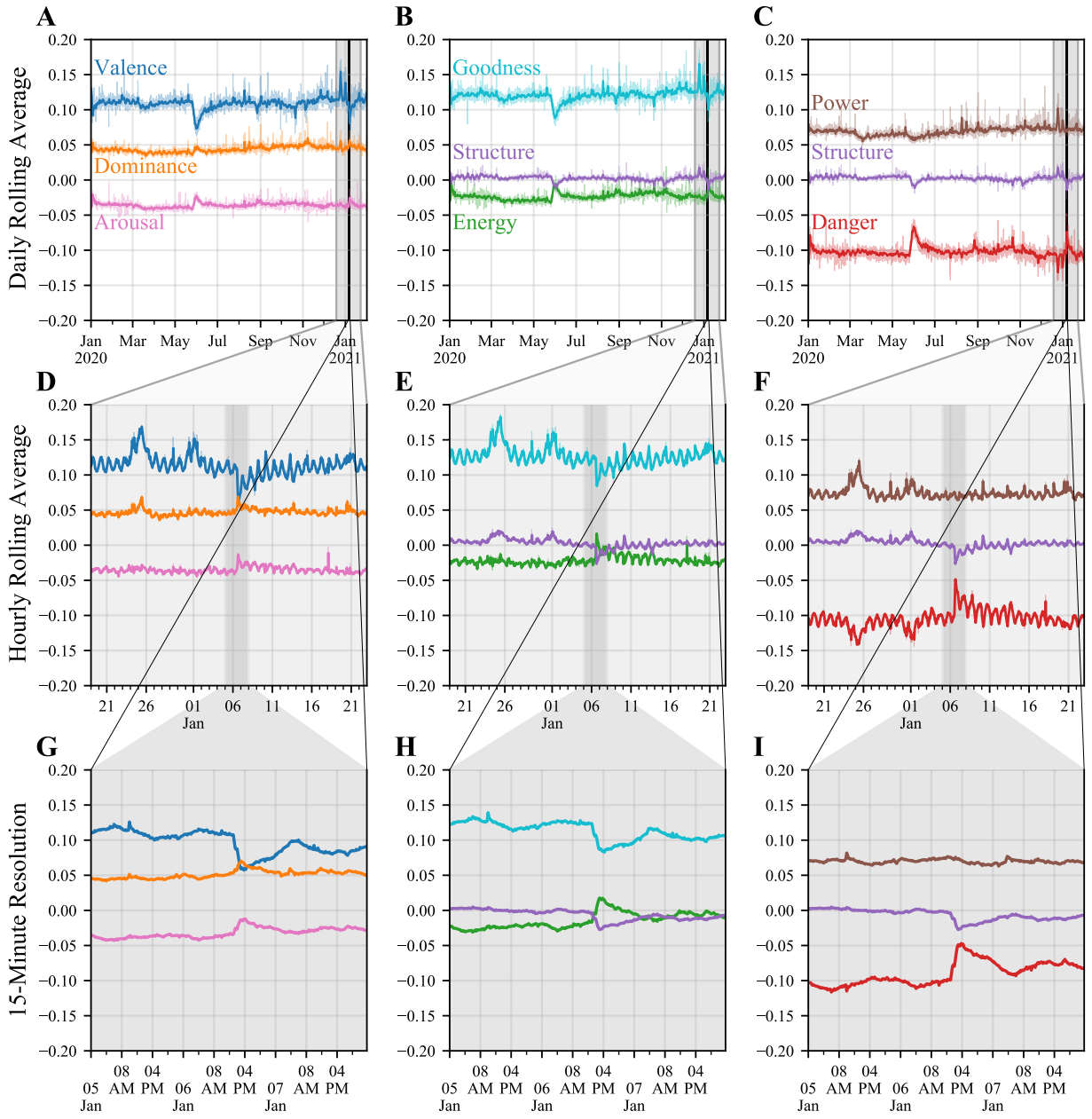
Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

Prototype ousiometer—Twitter:



The PoCSverse
Meaning
51 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

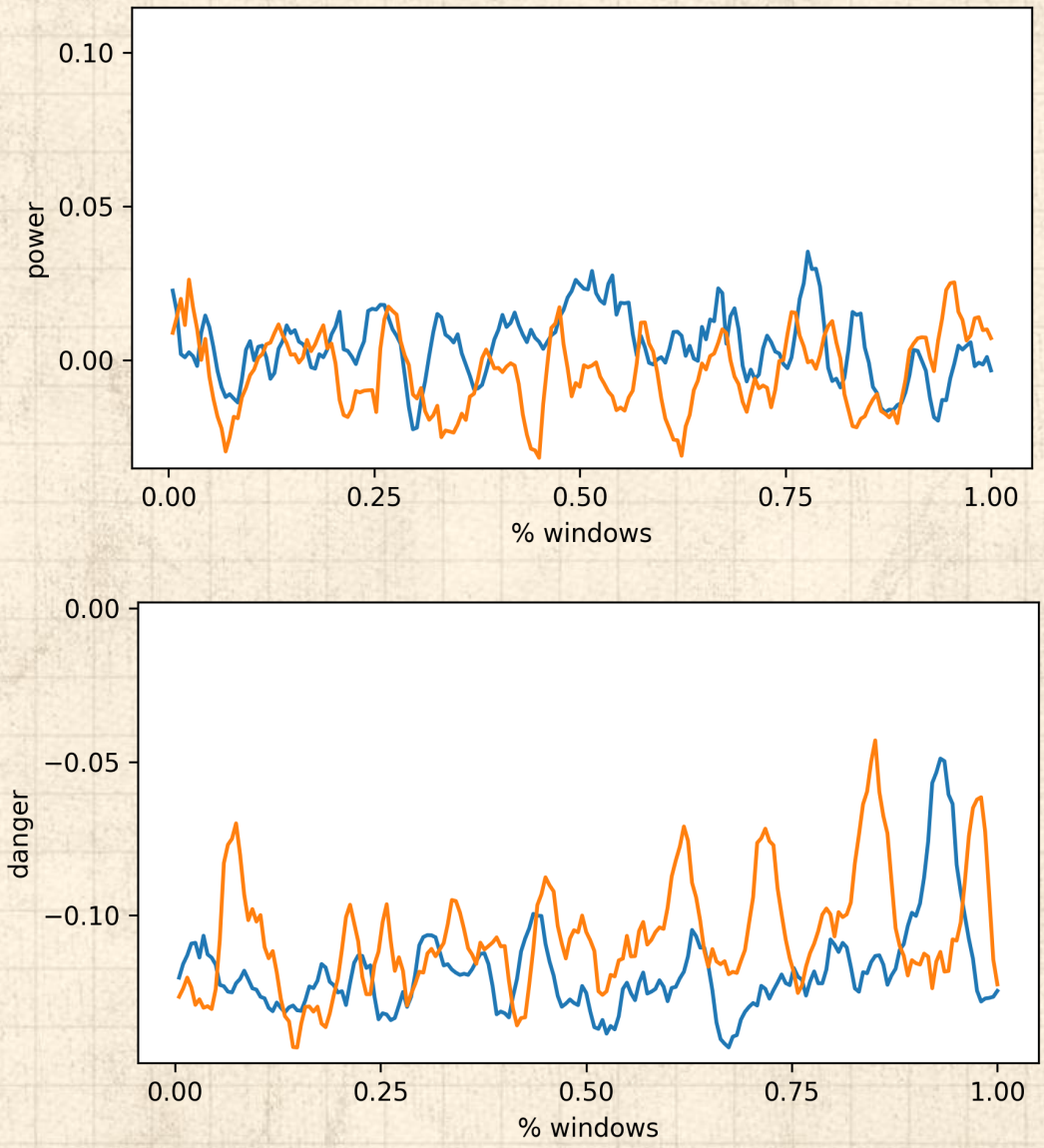
Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

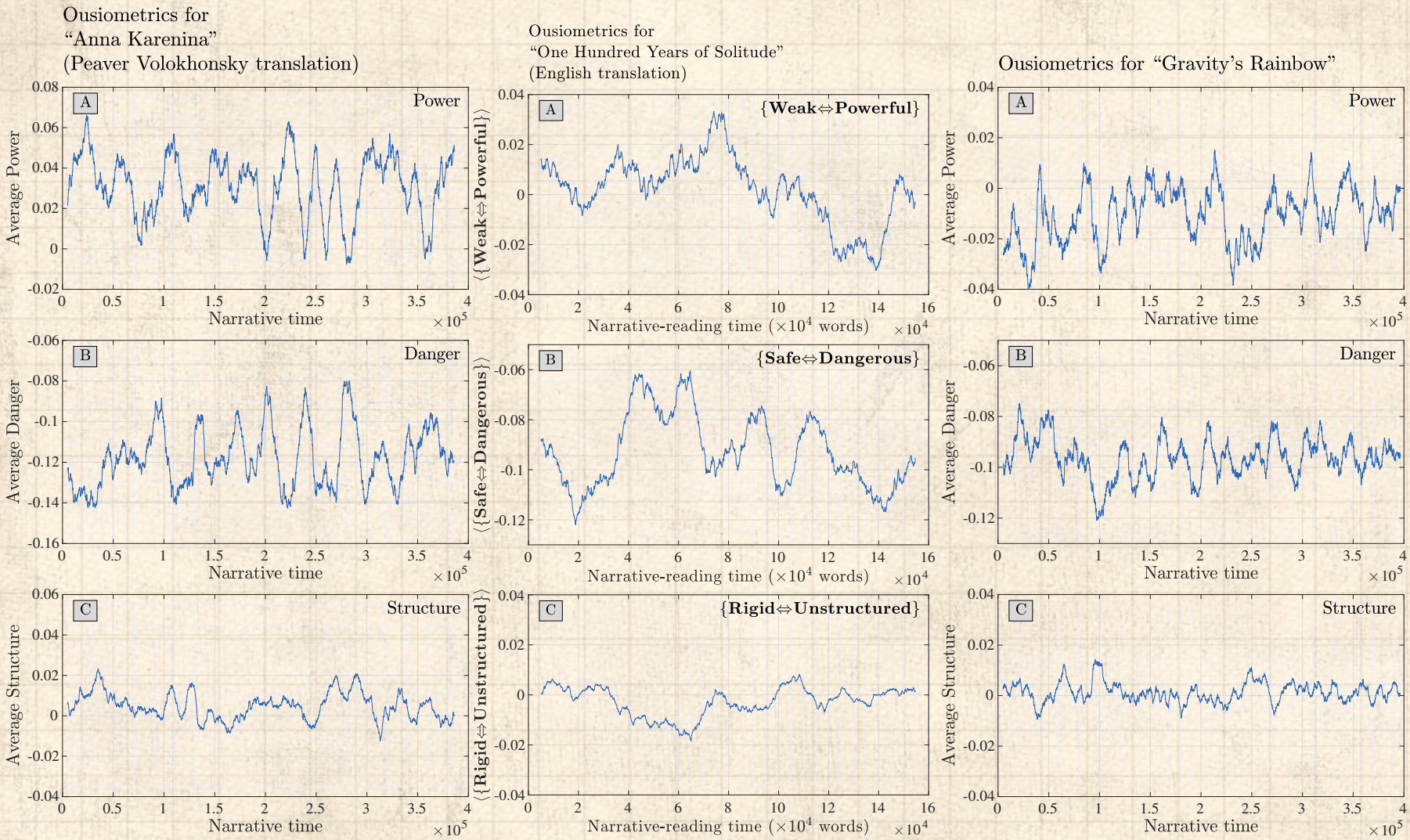
Prototype ousiometer—Harry Potter:



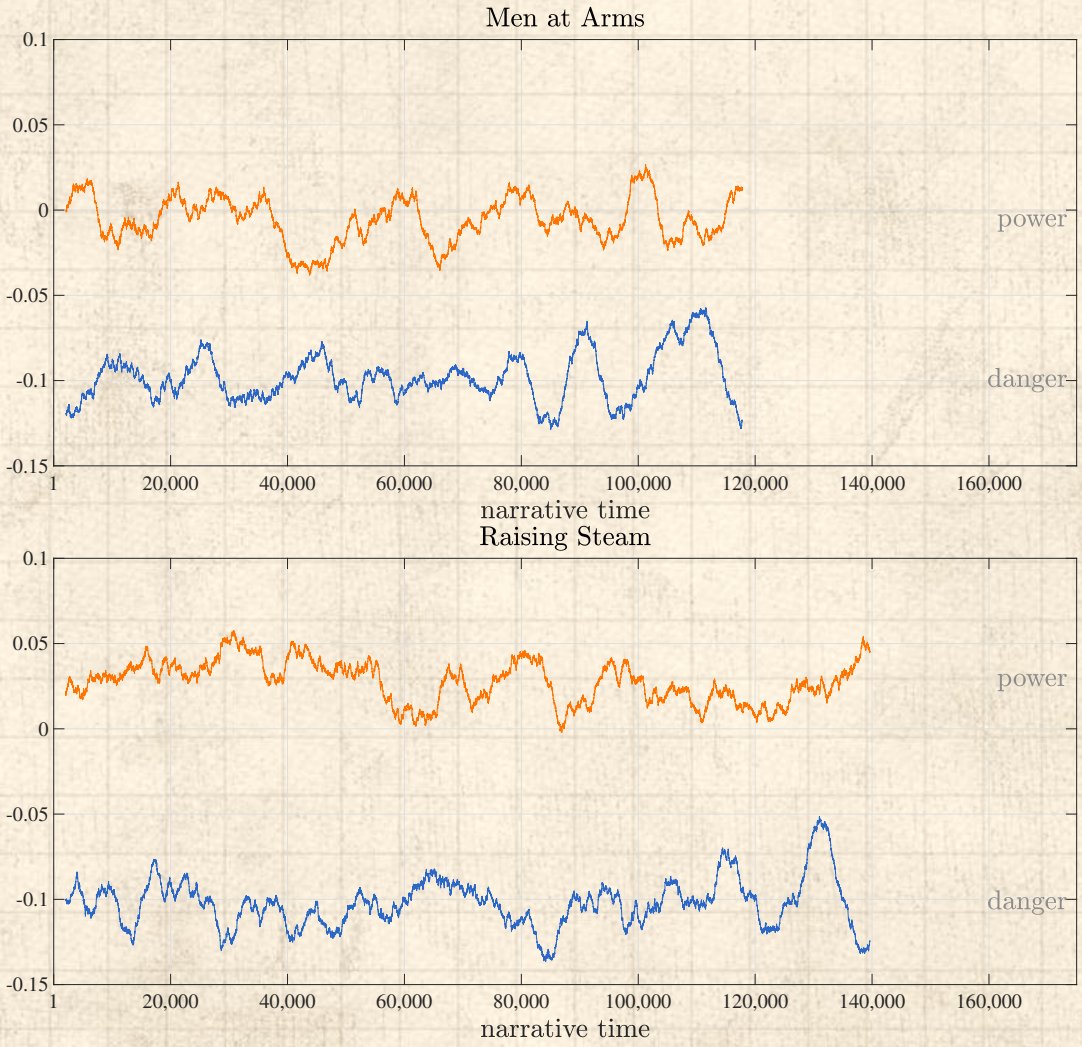
Blue: Harry Potter and the Half-Blood Prince
Orange: Harry Potter and the Deathly Hallows

The PoCSverse
Meaning
52 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

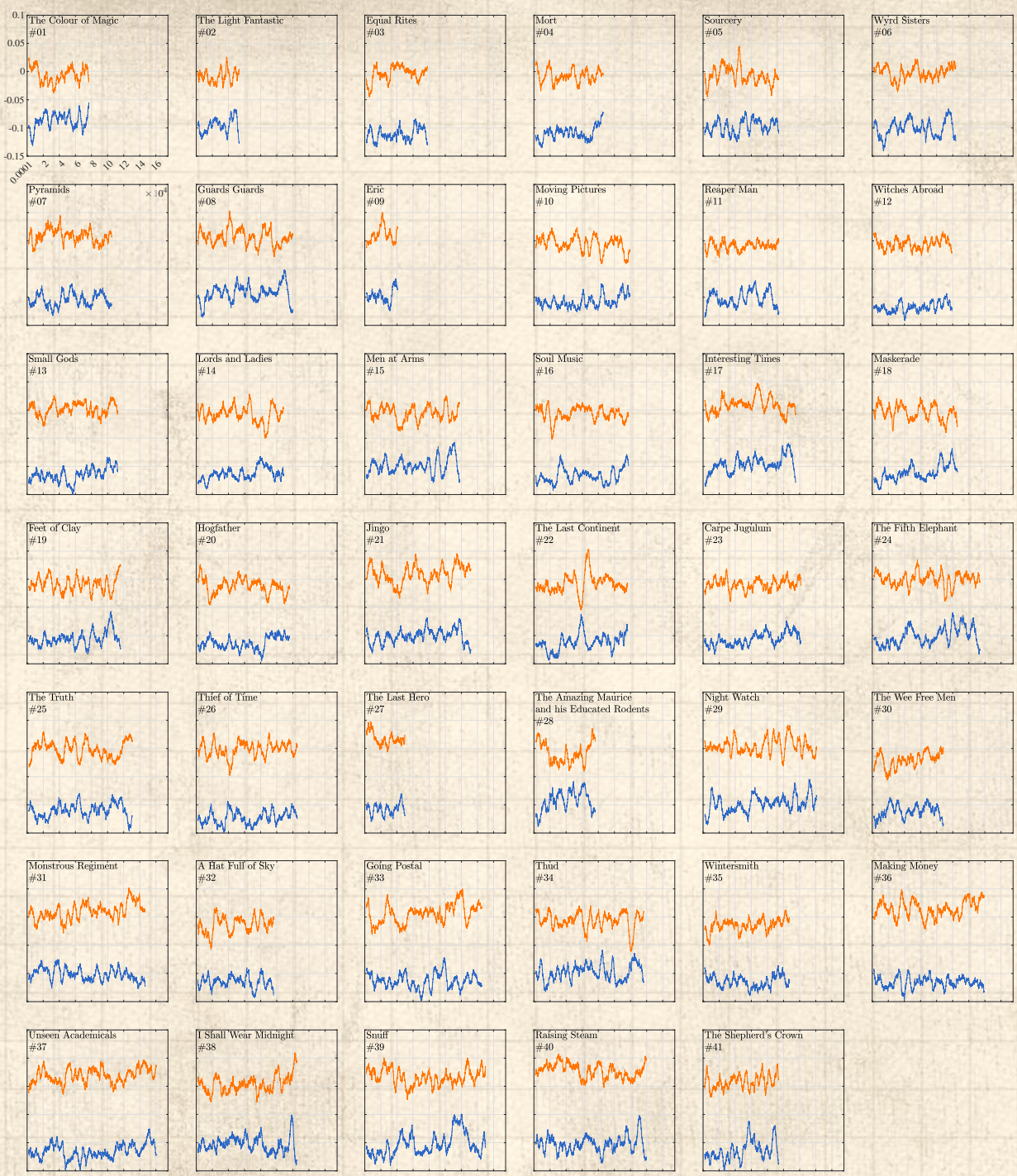
Power and Danger time series for books:



Prototype ousiometer—Terry Pratchett's Discworld:



Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References



Measuring essential meaning

- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms

- Extremousionyms
- Dimension names

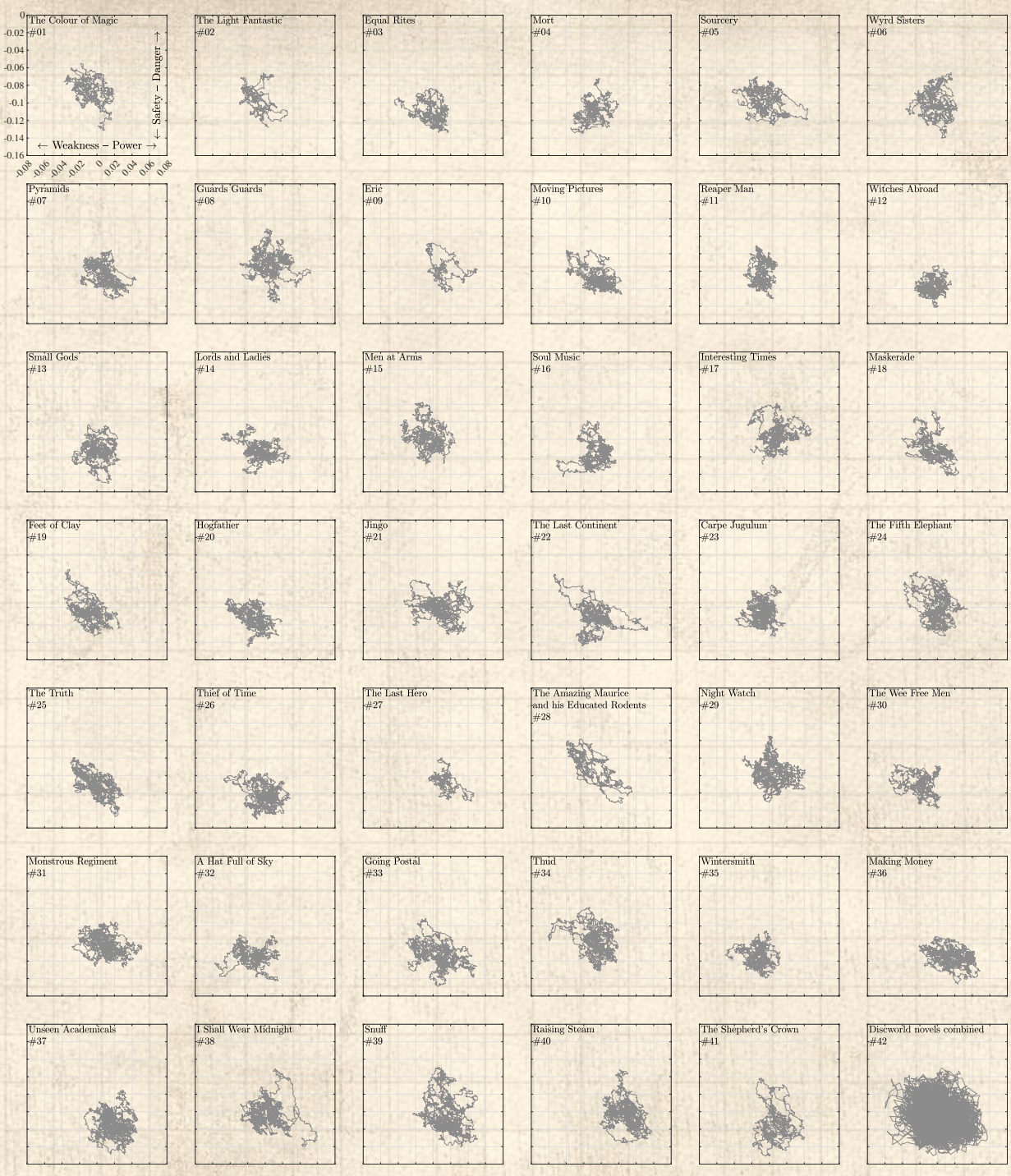
Safety bias

Applications

- The Ousiometer
- Correspondences
- Nutshell

Extras

References



Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

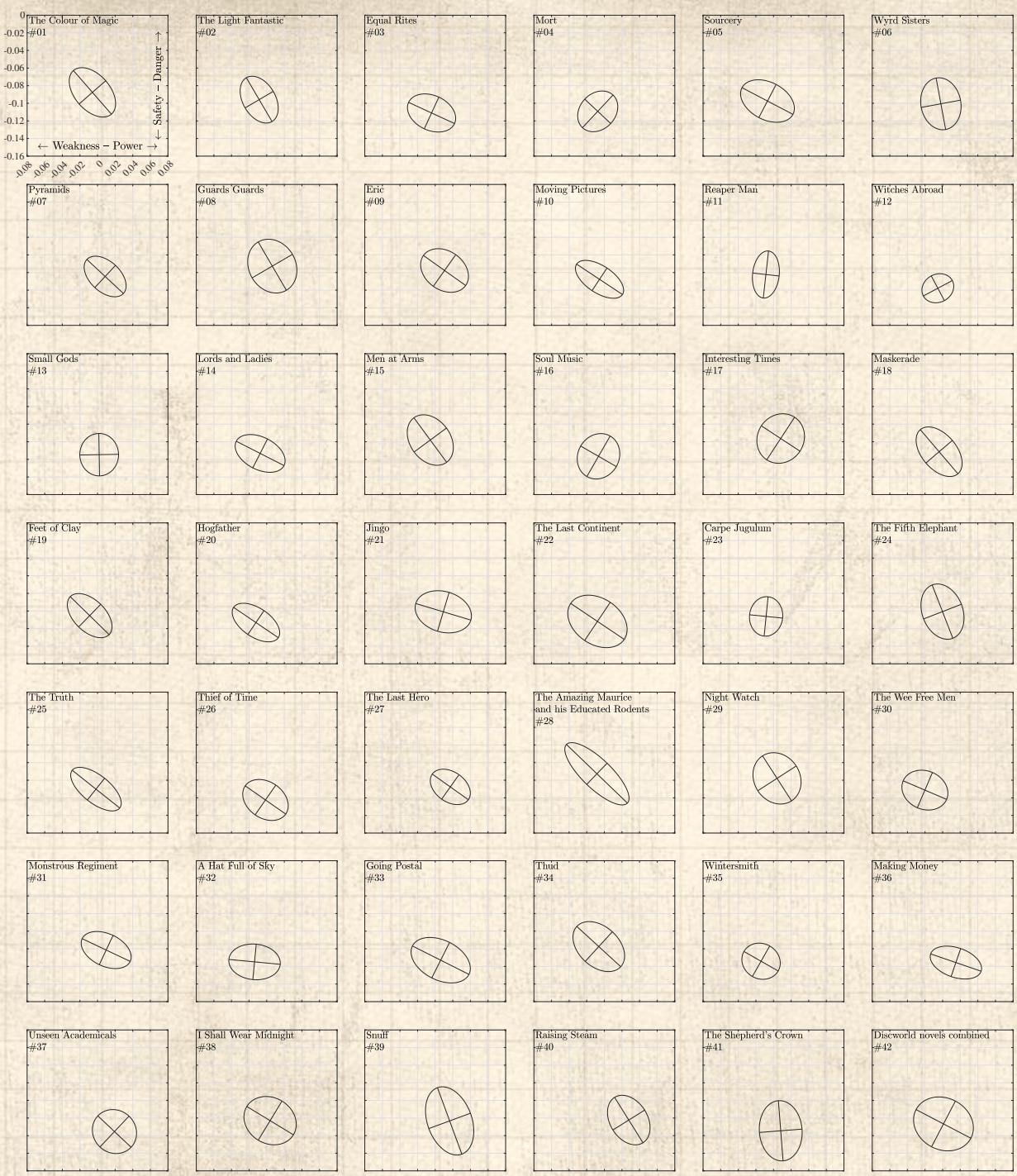
Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References



The PoCSverse

Meaning

57 of 77

Measuring essential meaning

- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms

- Extremousionyms
- Dimension names

Safety bias

Applications

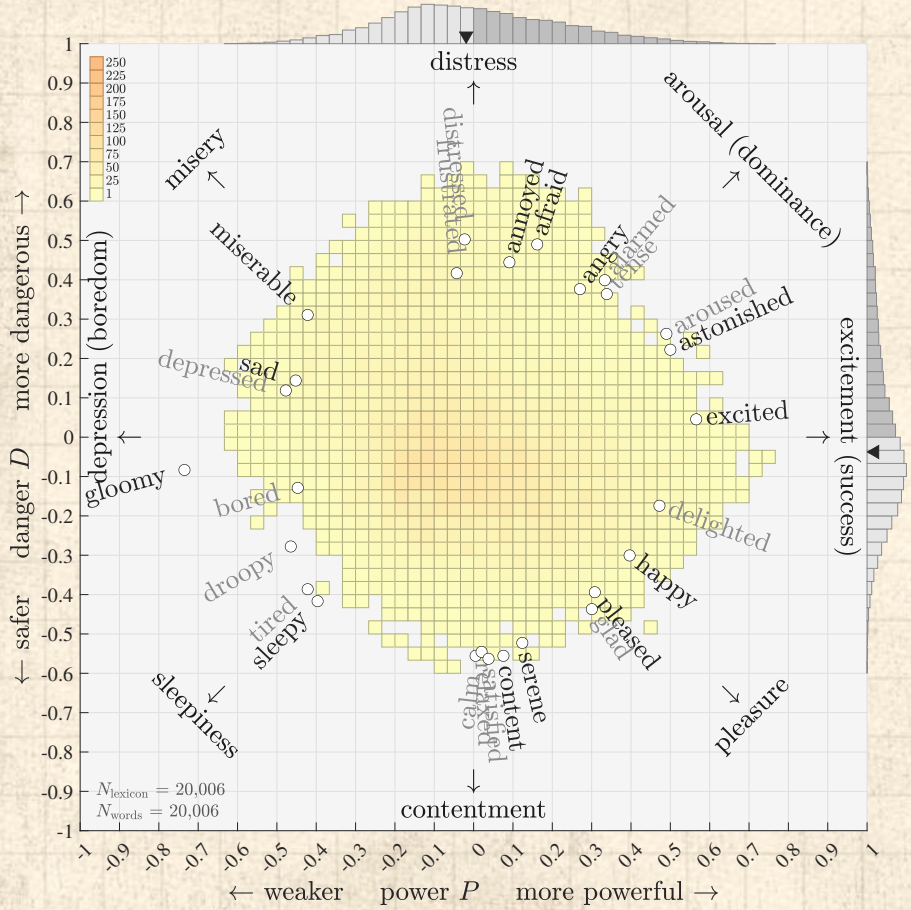
- The Ousiometer
- Correspondences
- Nutshell

Extras

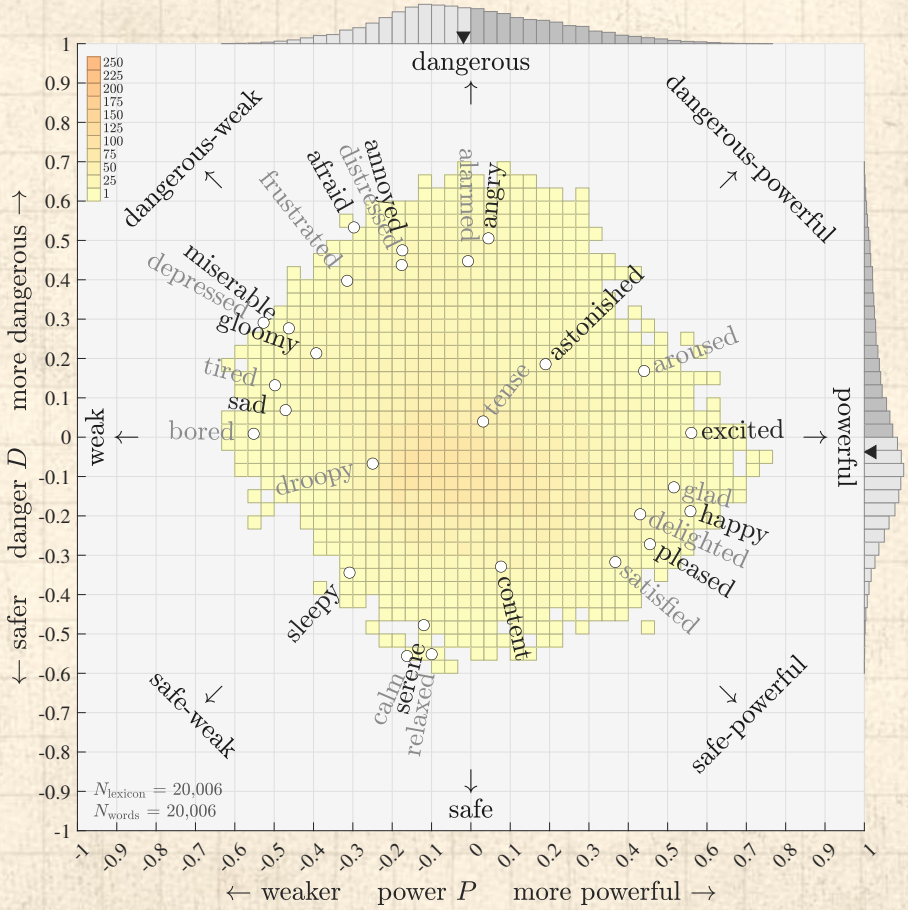
References

- Rough agreement with Russell's circumplex model, [18] which itself doesn't disagree with a 2-d orthogonal framework.

A. Circumplex model of affect:



B. Power-danger coordinates for Russell's affect words:



Dungeons & Dragons—Two alignment axes for character:

[1]

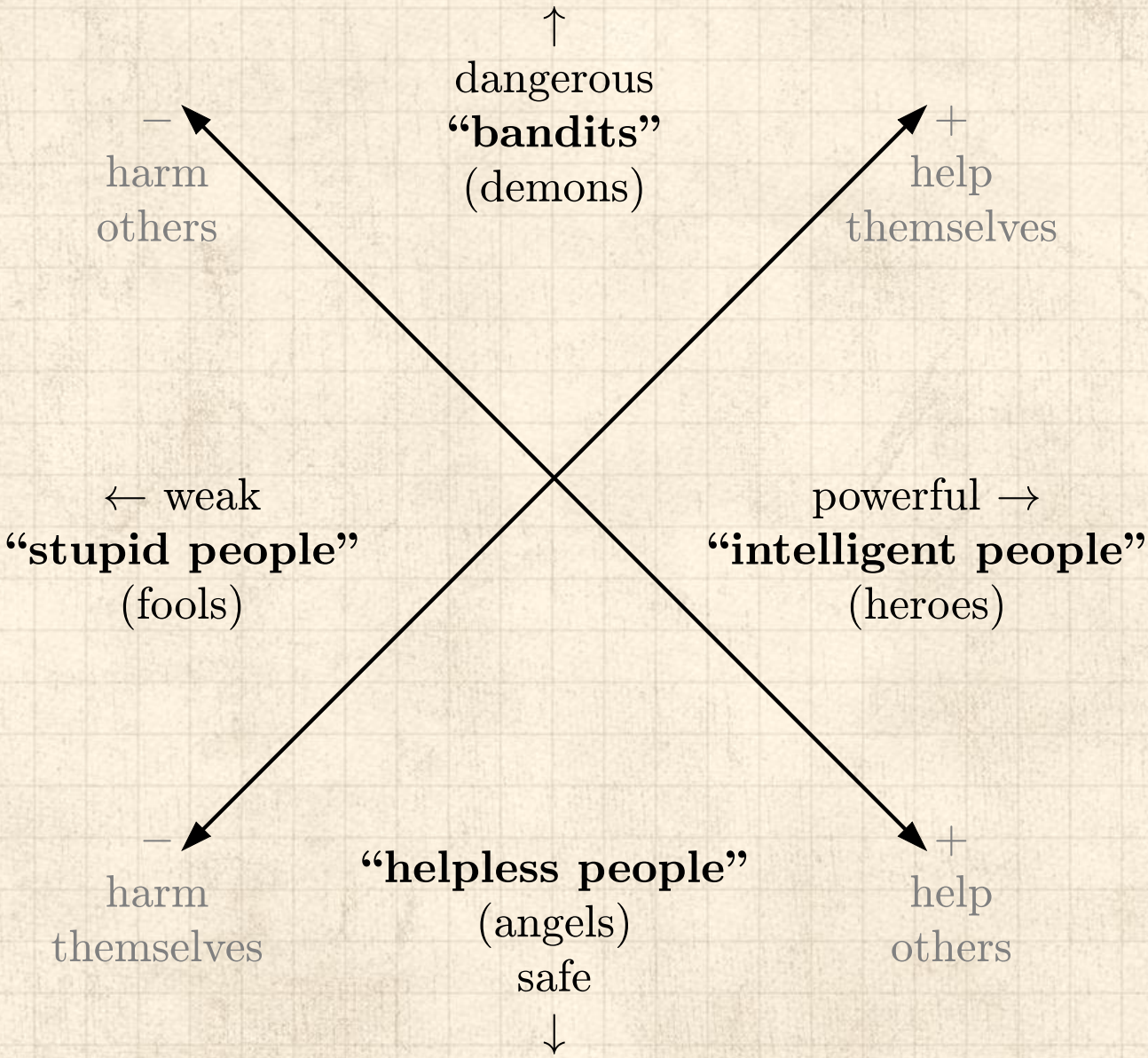
{lawful ⇔ chaotic} (vertical) and {good ⇔ evil} (horizontal).

[1] From this Reddit thread, where, naturally, the choices are enthusiastically debated.

The PoCSverse
Meaning
60 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

lawful-good ~ structured- powerful-safe	neutral-good ~ neutral- powerful-safe	chaotic-good ~ unstructured- powerful-safe
lawful-neutral ~ structured- neutral	(true) neutral	chaotic-neutral ~ unstructured- neutral
lawful-evil ~ structured- dangerous	neutral-evil ~ neutral- dangerous	chaotic-evil ~ unstructured- dangerous

Aligns with rotated version of Cipolla's Basic Laws of Human Stupidity:



The PoCSverse
Meaning
62 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

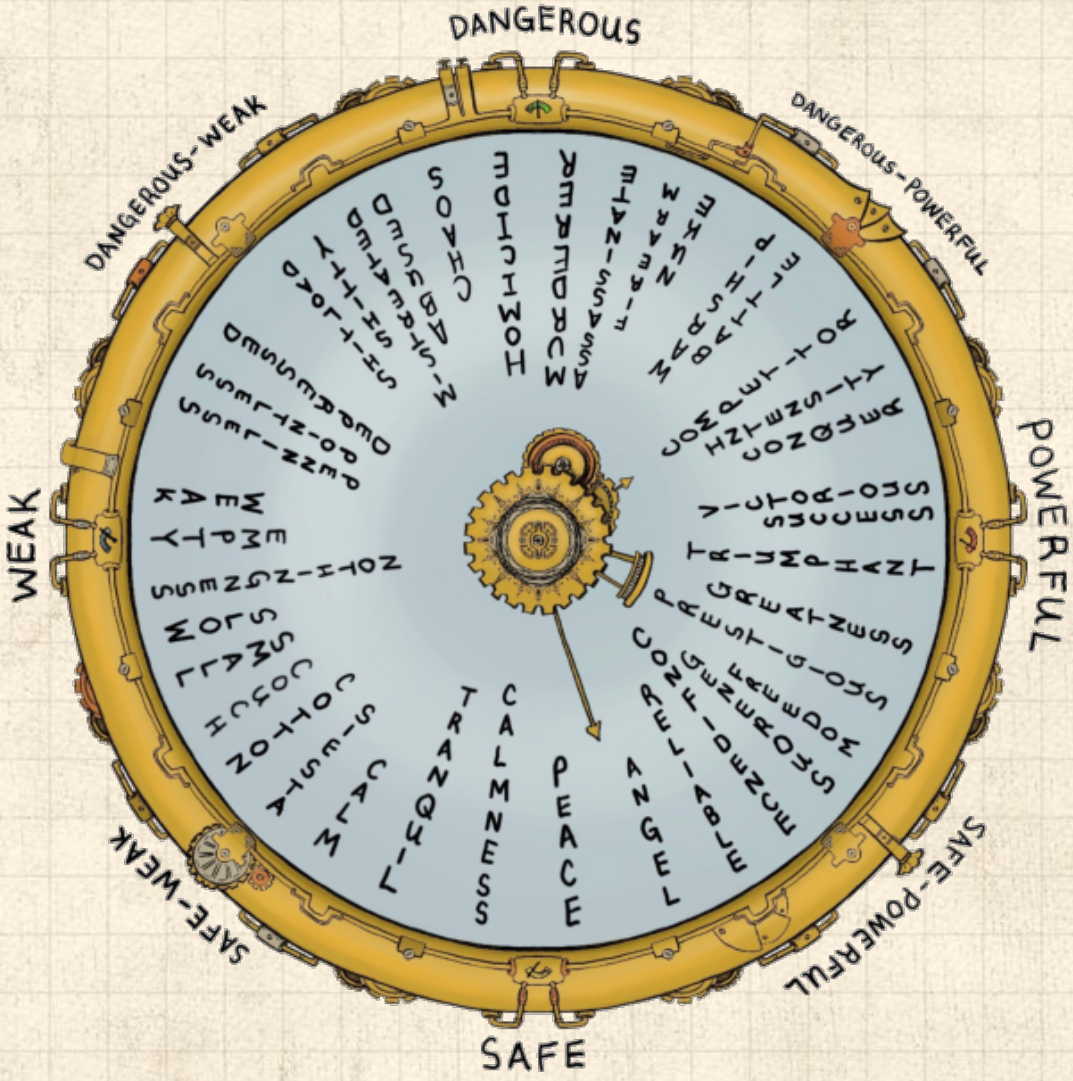
Findings, observations, possibilities:

- Power-danger-structure framework emerges in distinct settings, fitting types and tokens.
- Safety bias of communication refines Pollyanna Principle of positivity
- Happiness/Goodness = Power + Safety
- Ousiometer can be improved and refined.
- Possible: Emotions map onto powerful-safe and danger axes.
- Power-danger framework for survival.
- Possible: Telegnomics for stories—Measuring character arcs, plots.
- Complement to information theory which is meaning-free. [21]

See concluding remarks in the foundational paper. [5]

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

The Compass of Meaning:



Online appendices: Paper(s), flipbooks, code, ...
https://storylab.w3.uvm.edu/ousiometrics

The PoCSverse
Meaning
65 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

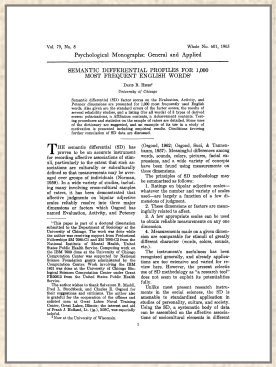
Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

Synonyms	Valence	Arousal	Dominance	Goodness	Energy	Structure	Power	Danger	Structure
happy	0.50	0.24	0.27	0.53	0.26	0.18	0.57	-0.16	0.18
delighted	0.44	0.16	0.18	0.44	0.17	0.17	0.44	-0.18	0.17
excited	0.41	0.43	0.21	0.39	0.40	0.29	0.56	0.04	0.29
astonished	0.01	0.28	0.07	0.00	0.27	0.10	0.18	0.19	0.10
aroused	0.21	0.45	0.17	0.19	0.43	0.23	0.43	0.19	0.23
tense	-0.10	-0.06	0.15	-0.01	0.05	-0.19	0.03	0.04	-0.19
alarmed	-0.31	0.32	-0.01	-0.32	0.31	0.03	-0.03	0.45	0.03
angry	-0.38	0.33	0.10	-0.33	0.39	-0.07	0.02	0.51	-0.07
afraid	-0.49	0.28	-0.26	-0.59	0.17	0.09	-0.32	0.52	0.09
annoyed	-0.40	0.28	-0.16	-0.46	0.21	0.07	-0.19	0.47	0.07
distressed	-0.36	0.27	-0.18	-0.43	0.19	0.10	-0.19	0.43	0.10
frustrated	-0.42	0.15	-0.25	-0.50	0.06	0.05	-0.33	0.38	0.05
miserable	-0.44	-0.04	-0.31	-0.52	-0.13	-0.02	-0.47	0.26	-0.02
sad	-0.28	-0.17	-0.35	-0.38	-0.28	0.02	-0.47	0.05	0.02
gloomy	-0.39	-0.09	-0.21	-0.43	-0.13	-0.09	-0.40	0.20	-0.09
depressed	-0.48	-0.05	-0.36	-0.58	-0.17	-0.01	-0.54	0.27	-0.01
bored	-0.35	-0.33	-0.30	-0.40	-0.38	-0.14	-0.55	-0.02	-0.14
droopy	-0.06	-0.15	-0.20	-0.13	-0.22	0.03	-0.25	-0.08	0.03
tired	-0.38	-0.18	-0.31	-0.45	-0.26	-0.07	-0.50	0.11	-0.07
sleepy	0.10	-0.37	-0.25	0.03	-0.46	0.02	-0.29	-0.36	0.02
calm	0.37	-0.40	-0.22	0.28	-0.51	0.11	-0.14	-0.56	0.11
relaxed	0.36	-0.41	-0.12	0.32	-0.46	0.03	-0.08	-0.56	0.03
satisfied	0.46	0.01	0.18	0.48	0.04	0.10	0.38	-0.30	0.10
at ease	—	—	—	—	—	—	—	—	—
ease	0.30	-0.11	-0.01	0.27	-0.15	0.09	0.10	-0.29	0.09
content	0.26	-0.20	0.06	0.29	-0.18	-0.03	0.09	-0.33	-0.03
serene	0.30	-0.37	-0.13	0.25	-0.42	0.03	-0.10	-0.48	0.03
glad	0.44	0.26	0.24	0.45	0.27	0.19	0.52	-0.10	0.19
pleased	0.44	0.05	0.29	0.51	0.13	0.03	0.47	-0.25	0.03



Psychological Monographs: General and Applied

SEMANTIC DIFFERENTIAL PROFILES FOR 1,000 MOST FREQUENT ENGLISH WORDS

David R. Heise

University of Chicago

Semantic differential (SD) factor scores on the Evaluation, Activity, and Potency dimensions are reported for 1,000 of the most frequent words. For given are the standard errors of the factor scores, the results of several reliability studies, and a listing for all words of 10 types of stylistic information. Comparisons are made with other studies in which scaling procedures and stimulus-to-be-sampled of values are included. Major uses of the dictionary are suggested, and an example of its use in a study of the structure of personality attributes is presented. Conditions favoring further extensions of SD data are discussed.

THE semantic differential (SD) has been used by its creator-developers and by others, particularly to the extent that such connotations are culturally or subculturally shared, to study the psychological worlds of assigned cross groups of individuals (Osgood, 1962). In a wide variety of studies, factorial analyses of SD ratings on samples of concepts or values, it has been demonstrated that affective judgments on bipolar adjective scales reliably involve not three independent dimensions or factors which Osgood has named Evaluation, Activity, and Potency (Osgood, 1962; Osgood, Suci, & Tannenbaum, 1957). Investigator differences among words, sounds, colors, pictures, facial expressions, and a wide variety of concepts have been found using measurements on these factor dimensions.

The principles of SD methodology may be summarized as follows:

1. Certain general connotative adjective scales—whatever the number and variety of scales used—are largely a function of a few dimensions of meaning.

2. These dimensions or factors are meaningfully related to affect.

3. Any concept or stimulus scale can be used to obtain reliable measurements on any dimension.

4. Measurements made on a given dimension are comparable for stimuli of greatly different character (words, scales, stimuli, etc.).

The instrument's mechanism has been described elsewhere (Osgood, 1962), and only its essentials are restated here. However, the present extensive SD data are unique to the dictionary and does not apply to scales in generalizable fashion.

Unless noted, present research instruments the semantic differential (SD) is known to be standardized applicants in studies of personality, culture, and society. Using the SD, a systematic body of data has been accumulated on the connotative significance of antonymical elements in different

"Semantic differential profiles for 1,000 most frequent English words."

David R. Heise,
Psychological Monographs: General and Applied, **79**, 1, 1965. [6]

Dimension	Scale
Evaluation	Good-Bad
	Pleasant-Unpleasant
Activity	Active-Passive
	Lively-Still
Potency	Strong-Weak
	Tough-Tender
Stability	Rational-Emotional
	Tamed-Untamed

The PoCSverse
Meaning
67 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

Remeasuring meaning:

Confusion and Conflation:

Pleasure, Arousal, Dominance: Mehrabian and Russell revisited

Iris Bakker · Theo van der Voordt · Peter Vink · Jan de Boon

"Pleasure, arousal, dominance: Mehrabian and Russell revisited"

Bakker et al.,
Current Psychology, **33**, 405–421, 2014. [2]

- Test whether EPA and VAD match.
- Explore historical problems of defining end point descriptors for meaning dimensions.

The PoCSverse
Meaning
68 of 77

Measuring essential meaning
- History
- Definitions
- Emotions

Problems

Remeasuring meaning

Ousiograms
- Extremousionyms
- Dimension names

Safety bias

Applications
- The Ousiometer
- Correspondences
- Nutshell

Extras

References

References I

[1] T. Alshaabi, J. L. Adams, M. V. Arnold, J. R. Minot, D. R. Dewhurst, A. J. Reagan, C. M. Danforth, and P. S. Dodds.
Storywrangler: A massive exploratorium for sociolinguistic, cultural, socioeconomic, and political timelines using Twitter.
Science Advances, 7:eabe6534, 2021. pdf

[2] I. Bakker, T. Van Der Voordt, P. Vink, and J. De Boon.
Pleasure, arousal, dominance: Mehrabian and Russell revisited.
Current Psychology, 33:405–421, 2014. pdf

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

References II

[3] D. Beeferman, W. Brannon, and D. Roy.
RadioTalk: A large-scale corpus of talk radio transcripts.
arXiv preprint arXiv:1907.07073, 2019. pdf

[4] M. M. Bradley and P. J. Lang.
Affective norms for English words (ANEW): Stimuli, instruction manual and affective ratings.
Technical report c-1, University of Florida, Gainesville, FL, 1999.

[5] 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 and Telegnomics: The essence of meaning conforms to a two-dimensional powerful-weak and dangerous-safe framework

References III

with diverse corpora presenting a safety bias, 2021.
Available online at https://arxiv.org/abs/2110.06847. pdf

[6] D. R. Heise.
Semantic differential profiles for 1,000 most frequent English words.
Psychological Monographs: General and Applied, 79(8):1, 1965. pdf

[7] A. Mehrabian and J. A. Russell.
An Approach to Environmental Psychology.
MIT Press, 1974.

[8] A. Mehrabian and J. A. Russell.
The basic emotional impact of environments.
Perceptual and motor skills, 38:283–301, 1974. pdf

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

References IV

[9] J.-B. Michel, Y. K. Shen, A. P. Aiden, A. Veres, M. K. Gray, The Google Books Team, J. P. Pickett, D. Hoiberg, D. Clancy, P. Norvig, J. Orwant, S. Pinker, M. A. Nowak, and E. A. Lieberman. Quantitative analysis of culture using millions of digitized books. Science Magazine, 331:176–182, 2011. pdf

[10] S. M. Mohammad. Obtaining reliable human ratings of valence, arousal, and dominance for 20,000 English words. In Proceedings of The Annual Conference of the Association for Computational Linguistics (ACL), Melbourne, Australia, 2018. pdf

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

References V

[11] S. M. Mohammad.
Word affect intensities.
In Proceedings of the 11th Edition of the Language Resources and Evaluation Conference (LREC-2018), Miyazaki, Japan, 2018. pdf

[12] F. Moretti.
Distant Reading.
Verso, New York, 2013.

[13] C. Osgood, G. Suci, and P. Tannenbaum.
The Measurement of Meaning.
University of Illinois, Urbana, IL, 1957.

The PoCSverse
Meaning
73 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

References VI

[14] E. A. Pechenick, C. M. Danforth, and P. S. Dodds.
Characterizing the Google Books corpus: Strong limits to inferences of socio-cultural and linguistic evolution.
PLoS ONE, 10:e0137041, 2015. pdf

[15] C. S. S. Peirce.
Prolegomena to an apology for pragmaticism.
The Monist, 16(4):492–546, 1906. pdf

[16] A. J. Reagan, B. F. Tivnan, J. R. Williams, C. M. Danforth, and P. S. Dodds.
Sentiment analysis methods for understanding large-scale texts: A case for using continuum-scored words and word shift graphs.
EPJ Data Science, 6, 2017. pdf

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

References VII

[17] R. Reisenzein.
Wundt's three-dimensional theory of emotion.
Poznan Studies in the Philosophy of the Sciences and the Humanities, 75:219–250, 2000.

[18] J. A. Russell.
A circumplex model of affect.
Journal of Personality and Social Psychology, 39:1161, 1980. pdf

[19] E. Sandhaus.
The New York Times Annotated Corpus.
Linguistic Data Consortium, Philadelphia, 2008.
Available online at:
https://doi.org/10.35111/77ba-9x74.

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

References VIII

[20] I. Semenov.
Wikipedia word frequency, 2019.
https://github.com/IlyaSemenov/wikipedia-word-frequency, accessed 2021/04/02.

[21] C. E. Shannon.
A mathematical theory of communication.
The Bell System Tech. J., 27:379–423,623–656, 1948. pdf

[22] L. M. Solomon.
A factorial study of complex auditory stimuli (passive sonar sounds).
Unpublished Doctoral Dissertation, University of Illinois, 1954. pdf

Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References

References IX

[23] W. M. Wundt.
Grundriss der Psychologie.
Kröner, 1922.

The PoCSverse
Meaning
77 of 77
Measuring essential meaning
History
Definitions
Emotions
Problems
Remeasuring meaning
Ousiograms
Extremousionyms
Dimension names
Safety bias
Applications
The Ousiometer
Correspondences
Nutshell
Extras
References