

# The Meaning of Meaning

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Principles of Complex Systems, Vols. 1, 2, & 3D  
CSYS/MATH 300, 303, & 394, 2022-2023 | @pocsvox

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Santa Fe Institute | University of Vermont



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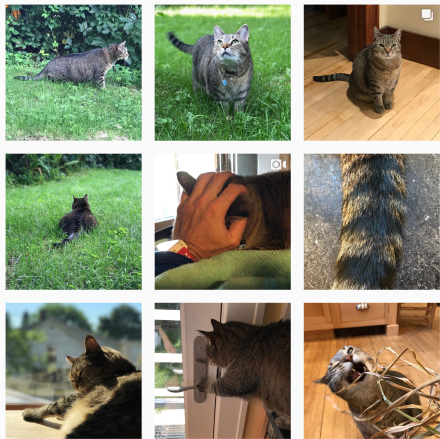
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murderess  
lethal  
chaos  
murderer  
murder  
aggression  
killer  
aggression  
assassinate  
early  
militaristic  
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## Special Guest Executive Producer




 On Instagram at [pratchett\\_the\\_cat](https://www.instagram.com/pratchett_the_cat)


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# The meaning of meaning:

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“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. <sup>[5]</sup>

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## What does meaning even mean?

- 📦 From the smack-tweeting Merriam-Webster:<sup>1</sup> “The thing that is conveyed especially by language”
- 📦 What are the essential characteristics of meaning?
- 📦 Does essential meaning meaningfully span some kind of space?





<sup>1</sup>Life goal: Never get owned by a dictionary on social media

# This is not easy:

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## “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.”

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## “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.”




# The meaning of pings:

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

L. M. Solomon,  
Unpublished doctoral dissertation, University of Illinois, , ,  
1954. [22]

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## 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?



## Semantic differentials from Osgood et al.:<sup>[14]</sup>

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

## 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 [13])

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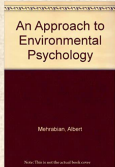
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References










"An Approach to Environmental Psychology."    
by Mehrabian and Russell (1974). [8]

"The basic emotional impact of environments"   
Mehrabian and Russell,  
Perceptual and motor skills, **38**, 283–301,  
1974. [9]

*"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."*

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# Major problems with measuring essential meaning:

1. **Scale:** Originally 10s and 100s of words → 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).

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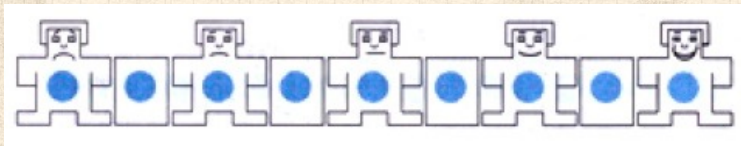
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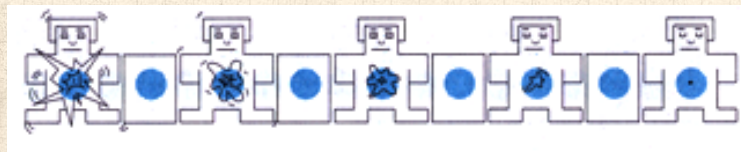


# 1999 ANEW study—three 1–9 scales: [4]

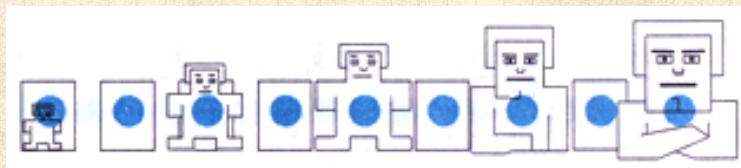
valence:



arousal:



dominance:



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# 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. <sup>[11]</sup>




## 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  $n = 4$ , there 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  $[0, 1]$ .

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## NRC VAD Lexicon<sup>[11]</sup>

<b>VAD endpoints:</b>	<b>Paradigm words and phrases presented to raters:</b> <sup>[12]</sup>
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:

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Standard correlations suggests a bit of Barney  
Rubble:

$$R(V, A) \simeq -0.268$$

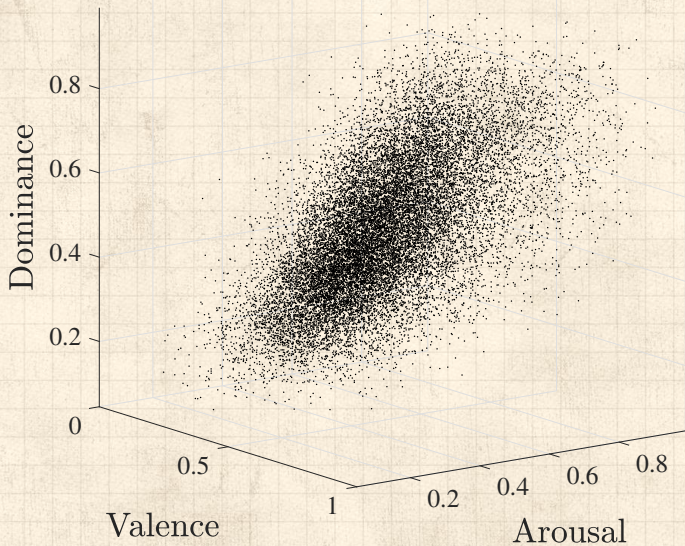
$$R(A, D) \simeq 0.302$$

$$R(D, V) \simeq 0.488$$



# The Delicious English Muffin of Meaning:<sup>1</sup>

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<sup>1</sup>Apricot jam, always.

$$R(D, V) \simeq 0.488$$

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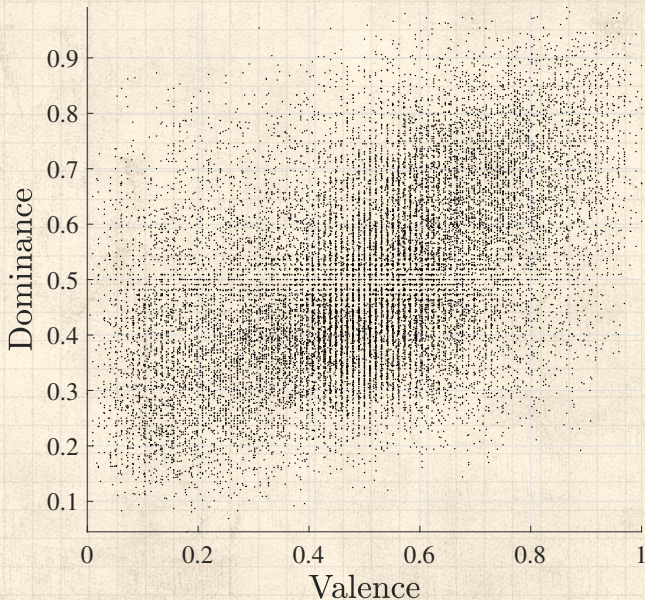
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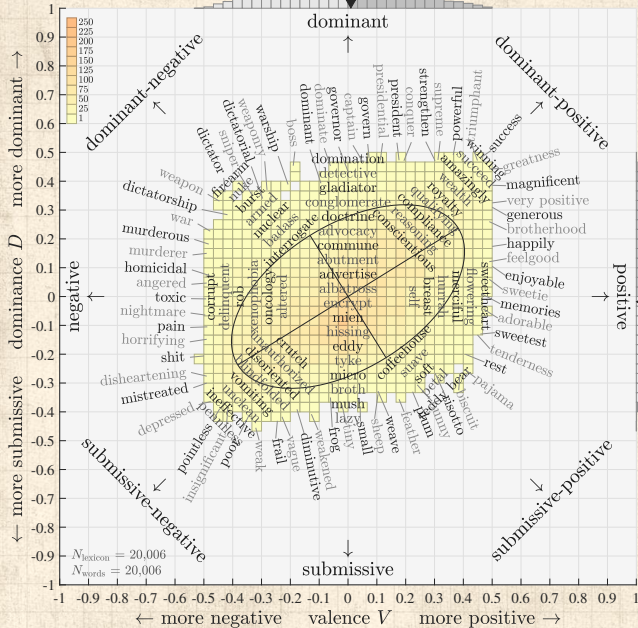
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~ valence-dominance ouosiogram for the NRC VAD lexicon ~



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# Building ousiograms (2021/01/31):

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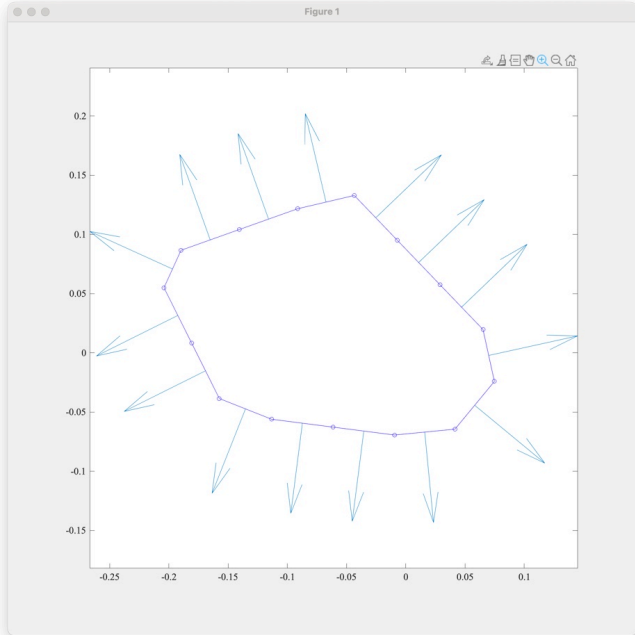
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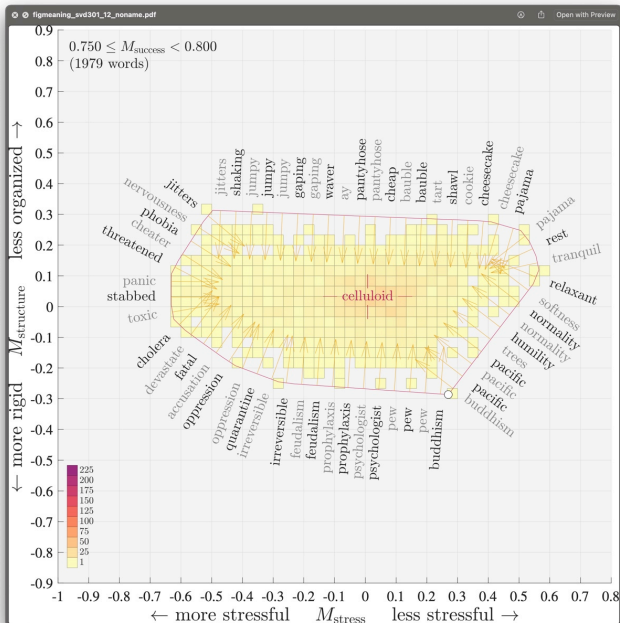
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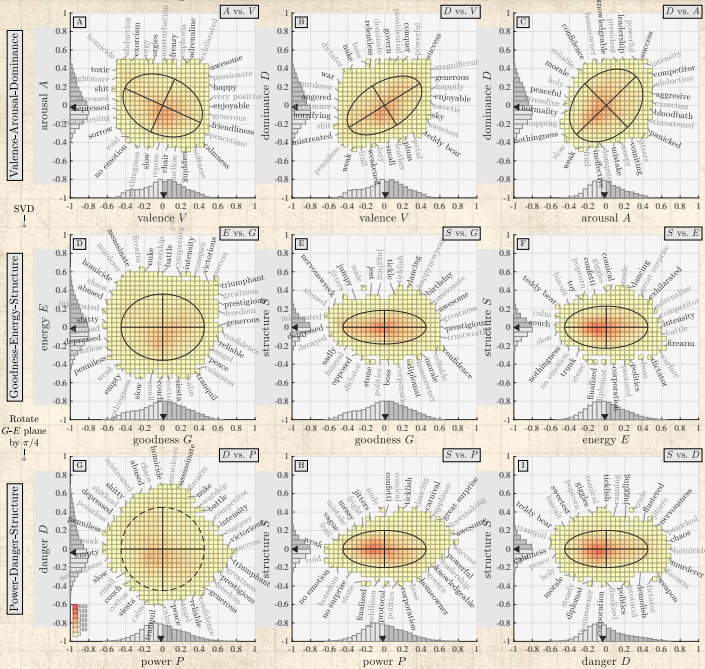
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Ousiograms for the NRC VAD lexicon in the VAD, GES, and PDS frameworks:



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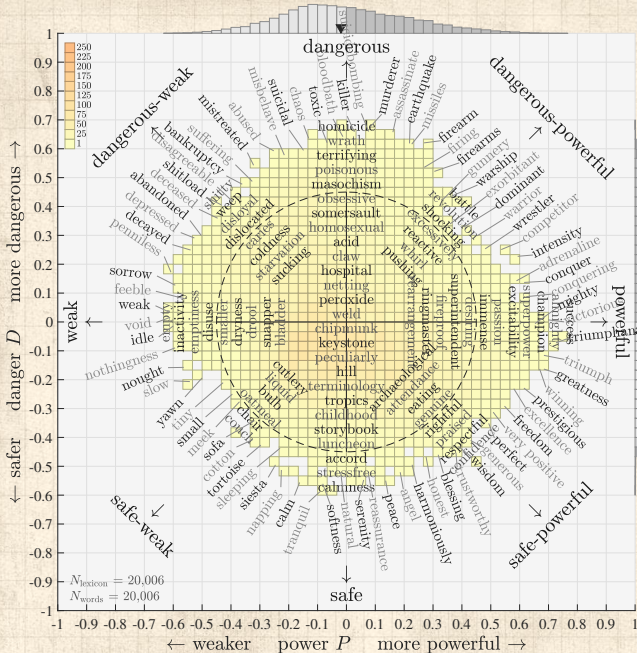
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~ power-danger ousiogram for the NRC VAD lexicon ~

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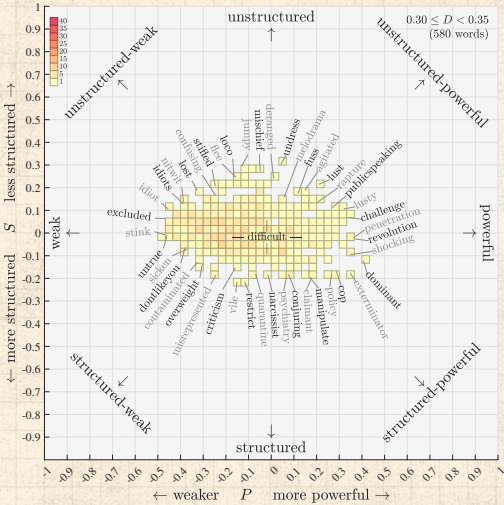
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# Ousiometric slices:



- 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
<b>Anchor: wisdom</b>	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
<b>Anchor: success</b>	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
<b>Anchor: volcanic</b>	-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
<b>Anchor: homicide</b>	-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)

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## Connections between meaning dimensions:

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

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

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

# From types to tokens: [7]

- 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). [10, 15]
  - 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]

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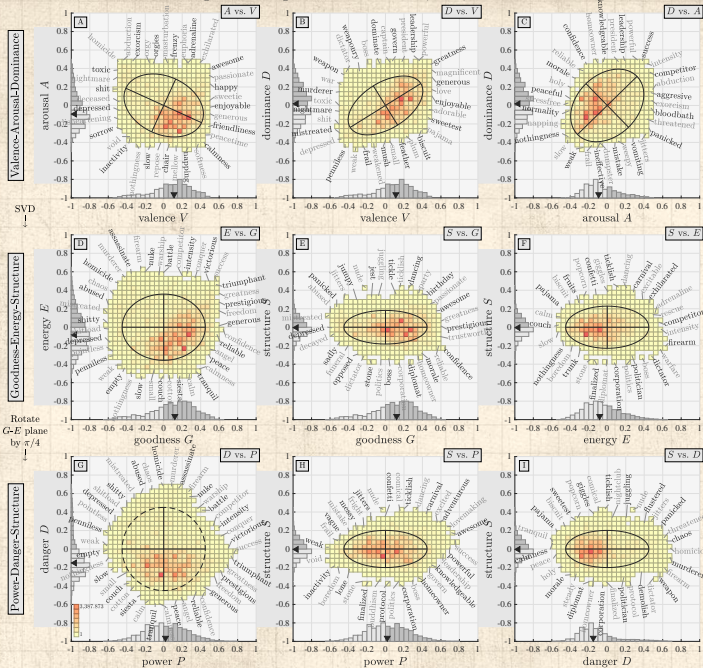
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Ousiograms for English fiction in the VAD, GES, and PDS frameworks:



Valence-Arousal-Dominance

SVD ↓

Goodness-Energy-Structure

Rotate G-E plane by  $\pi/4$  ↓

Power-Danger-Structure

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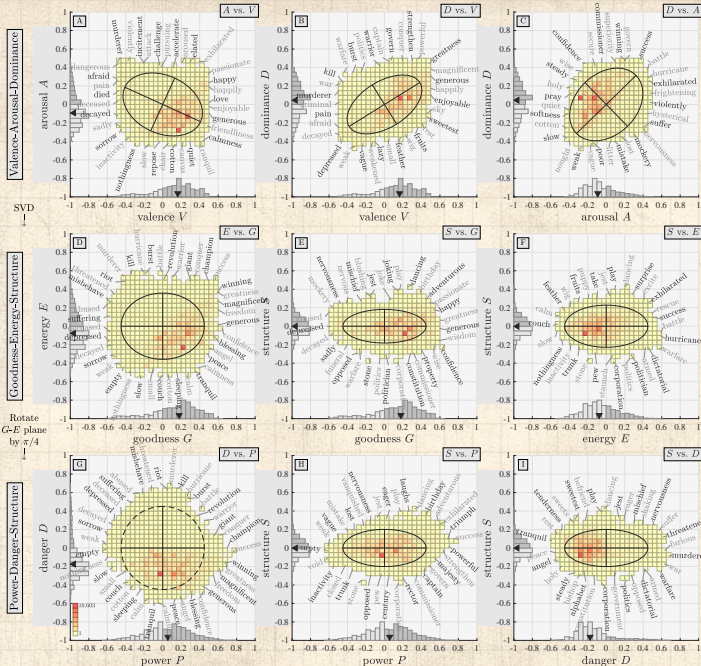
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Ousiograms for Jane Austen's novels in the VAD, GES, and PDS frameworks:



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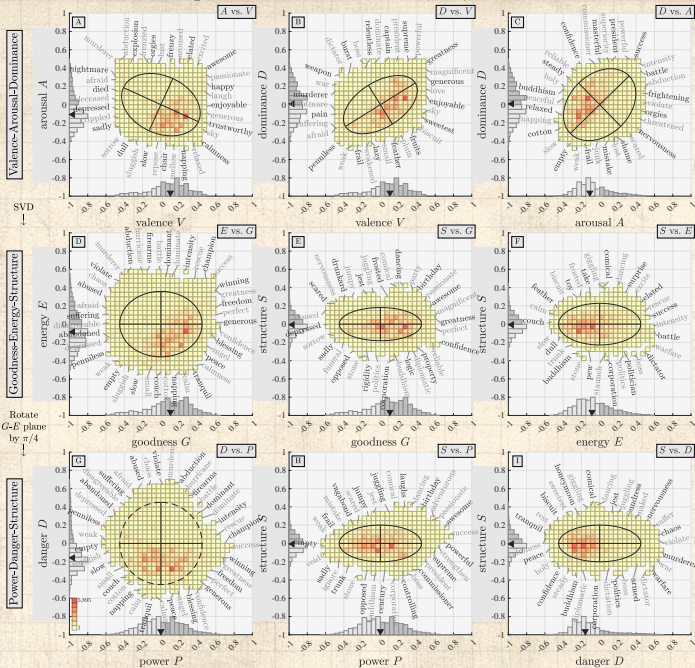
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Ousiograms for Sherlock Holmes in the VAD, GES, and PDS frameworks:



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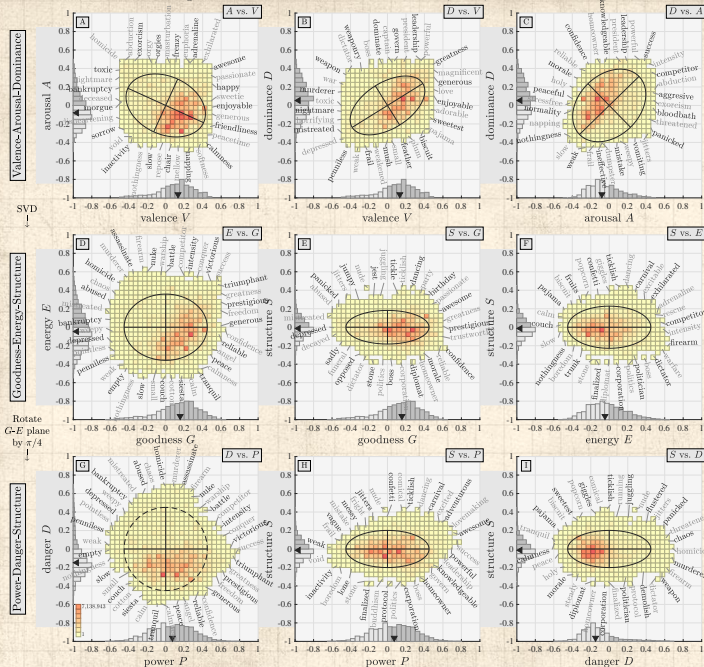
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Ousiograms for the New York Times in the VAD, GES, and PDS frameworks:



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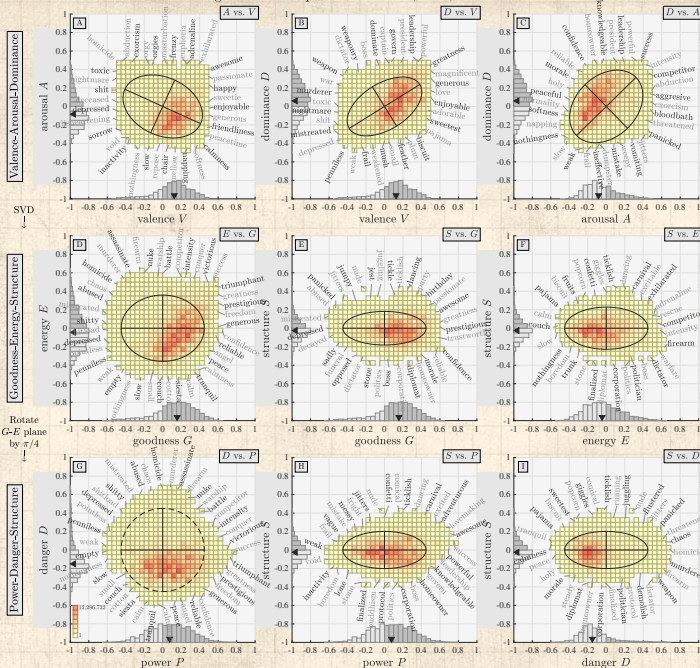
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# Ousiograms for Wikipedia in the VAD, GES, and PDS frameworks:



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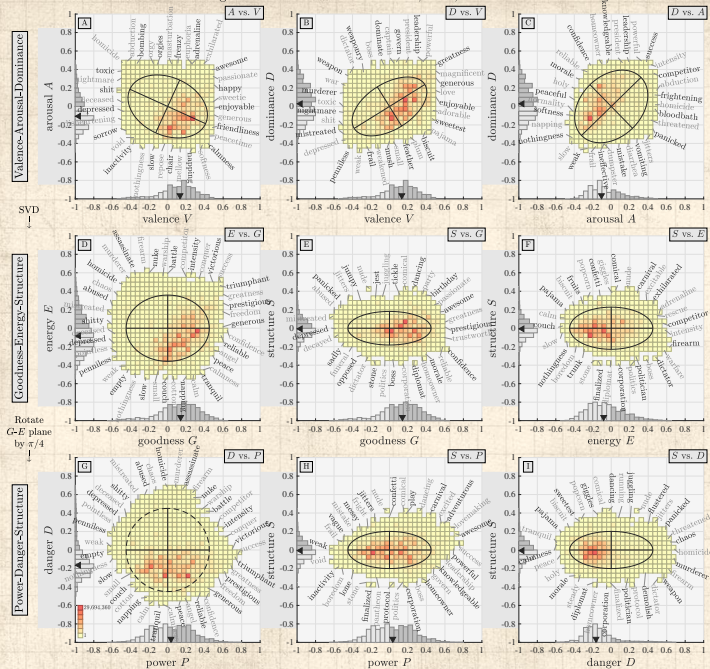
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Ousiograms for RadioTalk in the VAD, GES, and PDS frameworks:



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# Prototype ousiometer—Twitter:

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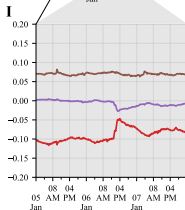
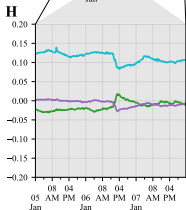
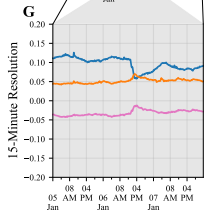
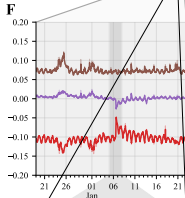
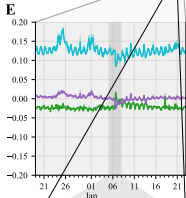
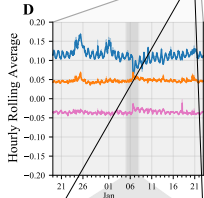
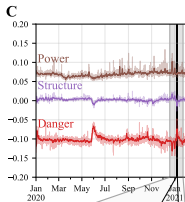
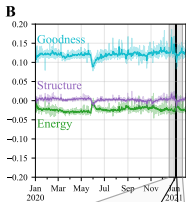
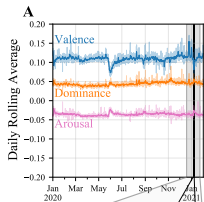
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# Prototype ousiometer—Harry Potter:

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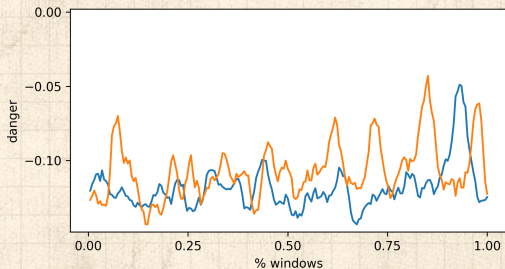
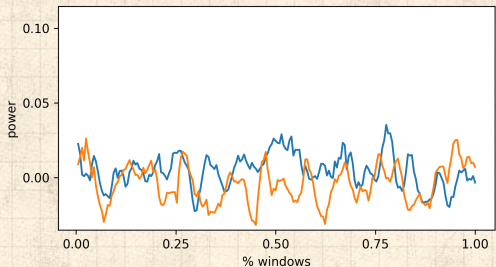
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Blue: Harry Potter and the Half-Blood Prince  
Orange: Harry Potter and the Deathly Hallows

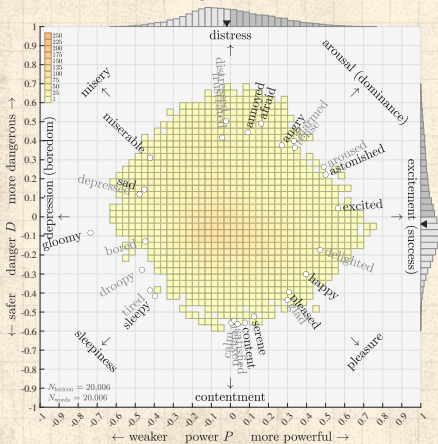




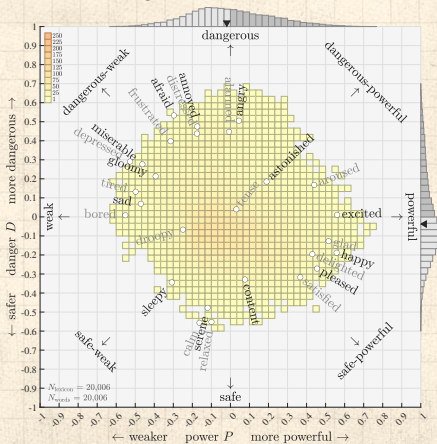


Rough agreement with Russell's circumplex model, [18] which itself doesn't disagree with a 2- $d$  orthogonal framework.

A. Circumplex model of affect:



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



# Dungeons & Dragons—Two alignment axes for character:



{lawful  $\Leftrightarrow$  chaotic}  
(vertical) and  
{good  $\Leftrightarrow$  evil}  
(horizontal).

<sup>1</sup>From this [Reddit thread](#), where, naturally, the choices are enthusiastically debated.

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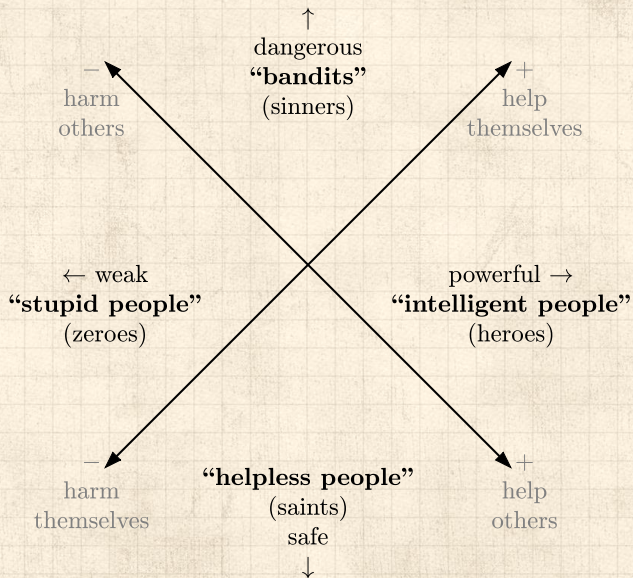
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lawful-good ~ structured- powerful-safe	neutral-good ~ neutral- powerful-safe	chaotic-good ~ unstructured- powerful-safe
lawful-neutral ~ structured- neutral	(true) neutral	chaotic-neutral ~ unstructured- neutral
lawful-evil ~ structured- dangerous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

# Aligns with rotated version of [Cipolla's](#) Basic Laws of Human Stupidity:

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Use the slider to indicate where you fall on this spectrum:

## Statistical "Which Character" Personality Quiz

This is an interactive personality quiz that will match you to fictional characters on similarity of description.

### Background

When the creator of this website would tell people that he published personality quizzes, people would usually ask him if he meant that he worked at BuzzFeed on their "Which Character" personality quizzes. And he would have to explain that he did not and had never been that style of test. These quizzes are very fun, as evidenced by their extreme popularity. Meaningful, two people who get the same result on a typical example of these tests much more in common than two randomly paired individuals. So for the longest time one character match personality quiz, but I guess it was inevitable because here is a more scientific, but still silly, "Which Character Are You?" test.

This test was created by getting more than 3 million volunteers to describe themselves on different adjective based scales. This created a database of descriptive ratings are compared against these profiles and the closest match is found. This quiz works and was developed can be found [here](#). There is also a version of self-report, and a [version for couples](#).

### Test Instructions

The test is made of pairs of adjectives with a slider between them. For each pair, drag the slider to where you fall on the spectrum between them. This test is self-select how many questions you want to do using the version option. The media recommended version is 185 seconds (~3 minutes).

### Participation

This interactive program is provided for entertainment and informational psychological advice or a screening tool of any kind and comes without any particular purpose.

At the end of the survey you will be asked for consent to include your responses. Your agree your responses may be used and shared per [the website privacy policy](#).

[Begin assessment](#)

juvenile (50%)

mature (50%)

frugal (23%)

lavish (77%)

social (81%)

reclusive (19%)

adventurous (76%)

stick-in-the-mud (24%)

haunted (100%)

blissful (0%)

orderly (23%)

chaotic (77%)

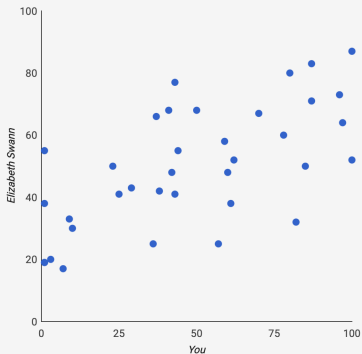
Version

The best match between the self assessment you provided and the profile of a fictional character as rated by other people who have taken this survey is the character Elizabeth Swann (Pirates of the Caribbean).



83% match

Your traits versus their traits are graphed below (click on points for labels).



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## Fictional characters most like Pratchett the Cat:

1. Elizabeth Swann (Pirates of the Caribbean): 83%
2. Daenerys Targaryen (Game of Thrones): 82%
3. Margaery Tyrell (Game of Thrones): 82%
4. Francisco d'Anconia (Atlas Shrugged): 82%
5. Dr. Hannibal Lecter (Hannibal): 82%
6. Audrey Horne (Twin Peaks): 81%
7. Princess Anna Karenina (Anna Karenina): 81%
8. Danny Ocean (Ocean's 11): 81%
9. Ragnar Lothbrok (Vikings): 81%
10. Olenna Tyrell (Game of Thrones): 80%

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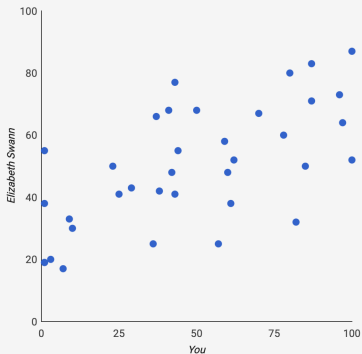


The best match between the self assessment you provided and the profile of a fictional character as rated by other people who have taken this survey is the character Elizabeth Swann (Pirates of the Caribbean).



83% match

Your traits versus their traits are graphed below (click on points for labels).



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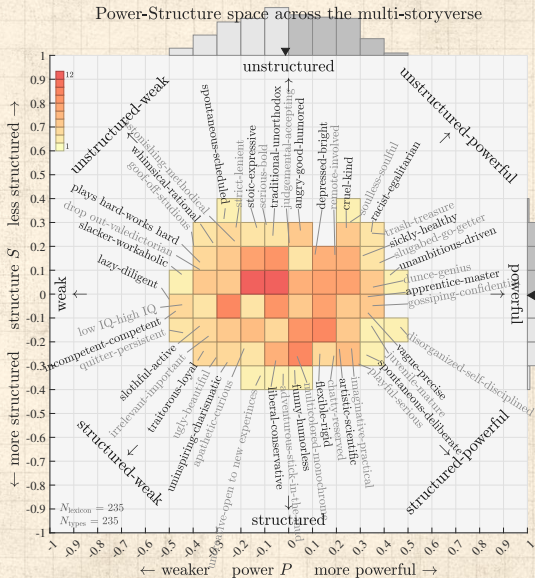






# 800 characters, 200+ semantic differentials:

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Source: <https://openpsychometrics.org>

# 800 characters, 200+ semantic differentials:

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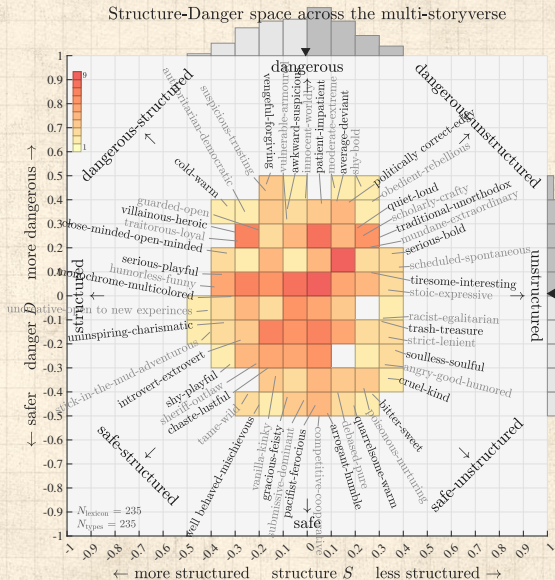
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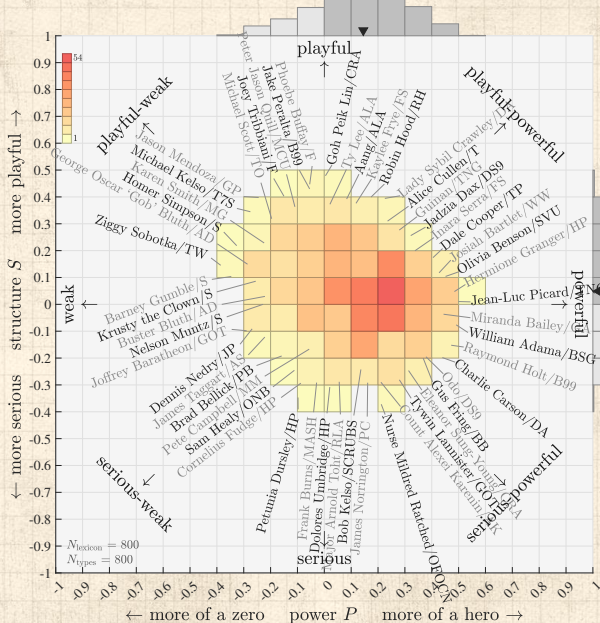
Source: <https://openpsychometrics.org>





# 800 characters, 200+ semantic differentials:

Power-Structure space across the multi-storyverse



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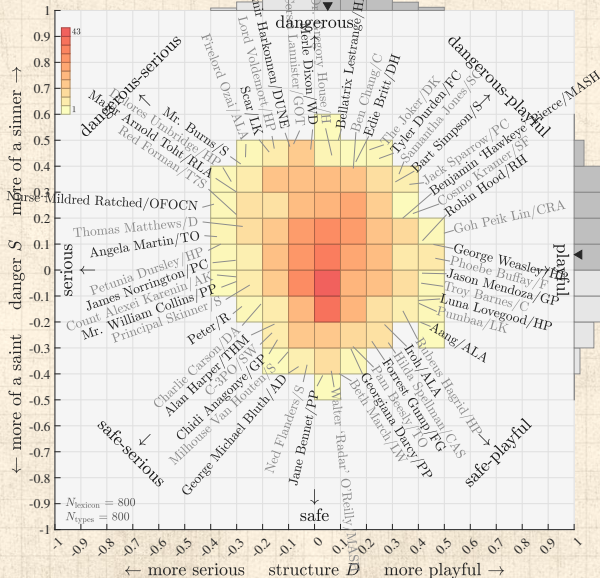




# 800 characters, 200+ semantic differentials:

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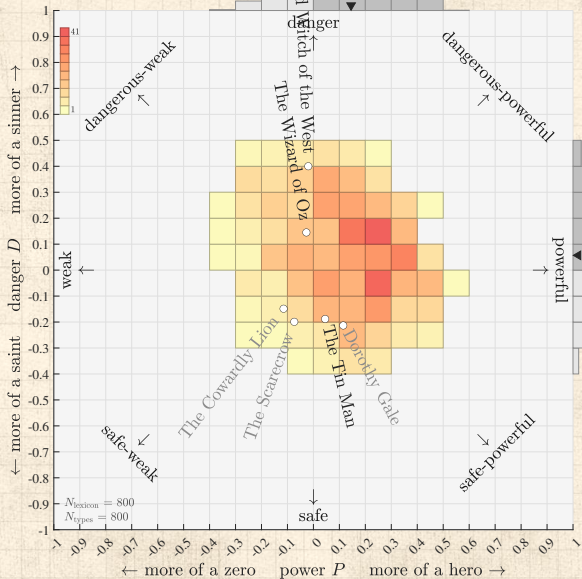
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Power-Danger space for The Wizard of Oz



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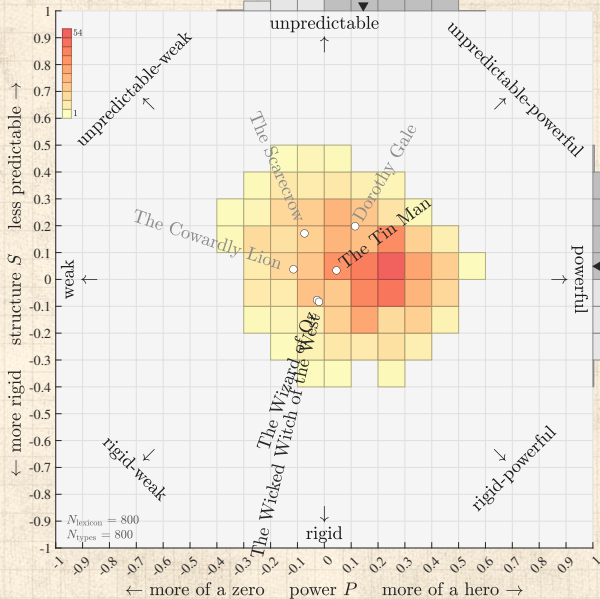
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# Power-Structure space for The Wizard of Oz



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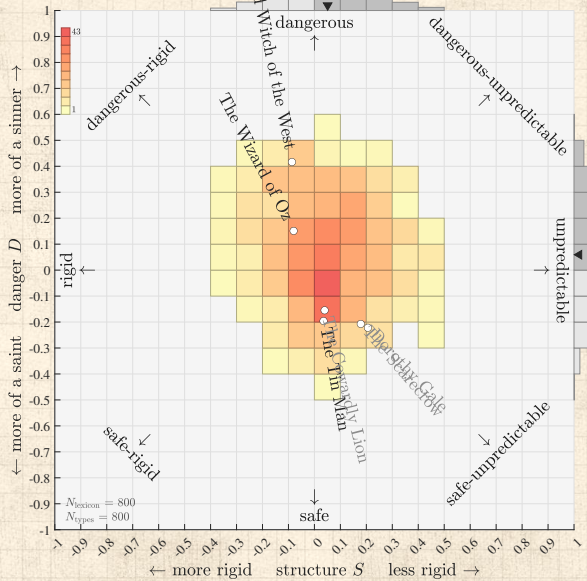
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Structure-Danger space for The Wizard of Oz



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# Power-Danger space for Arrested Development

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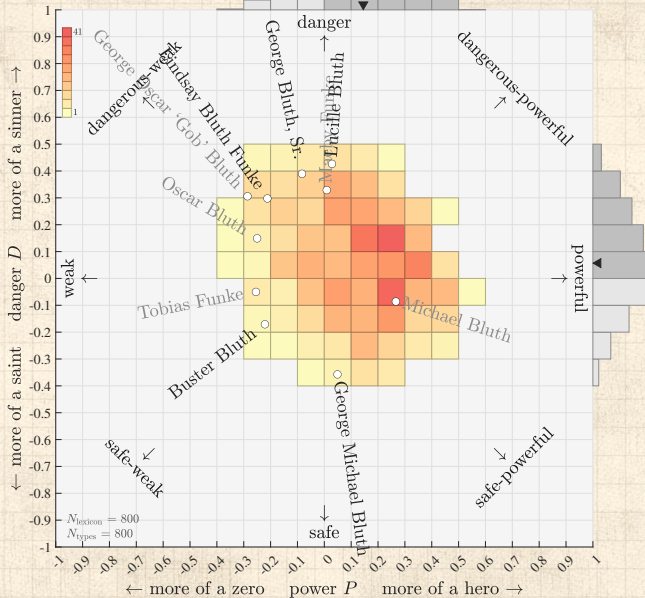
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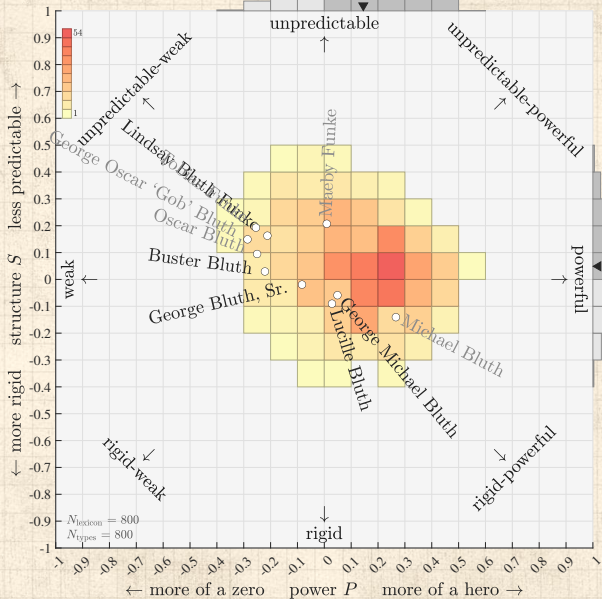
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# Power-Structure space for Arrested Development



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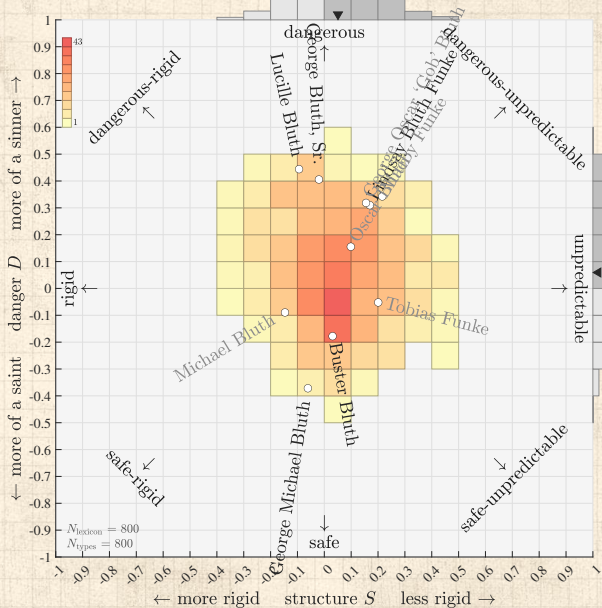
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# Structure-Danger space for Arrested Development



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# Power-Danger space for Game of Thrones

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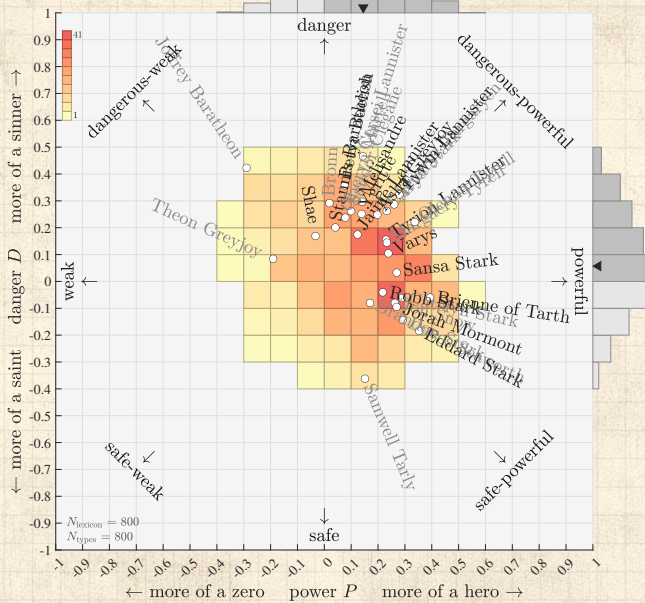
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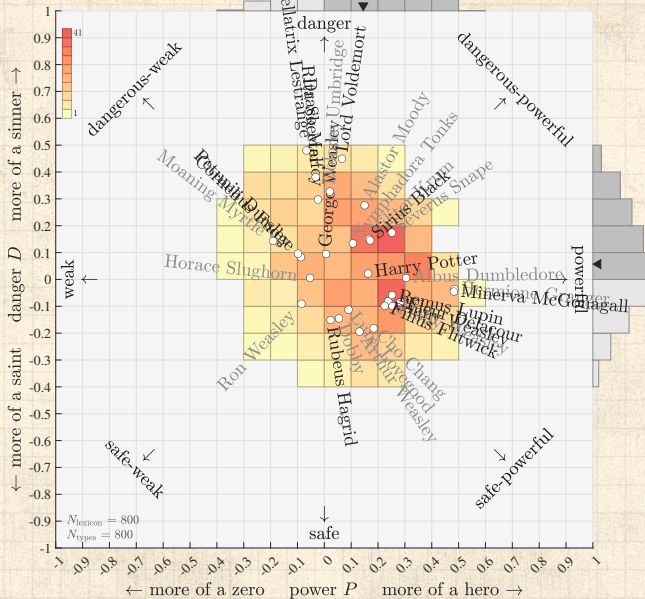








# Power-Danger space for Harry Potter



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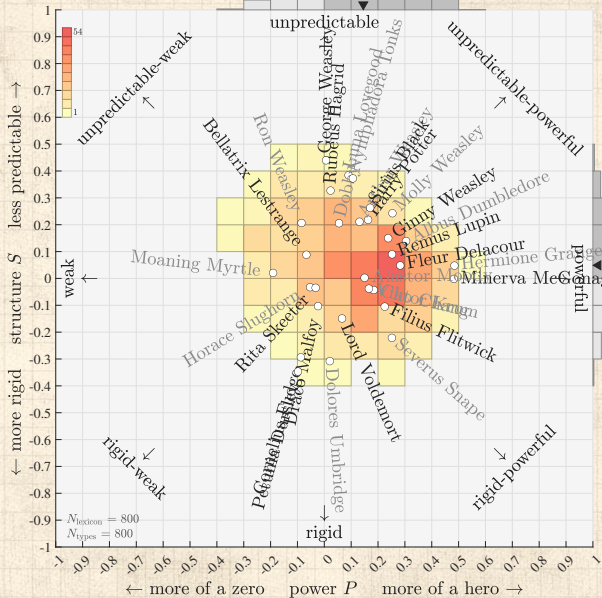
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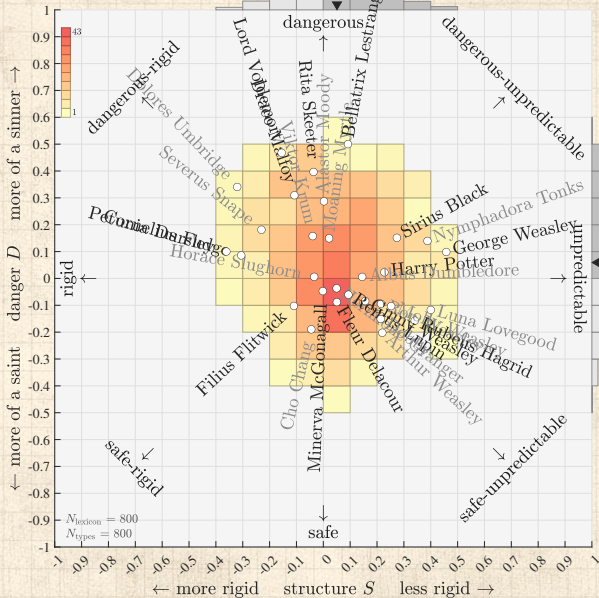
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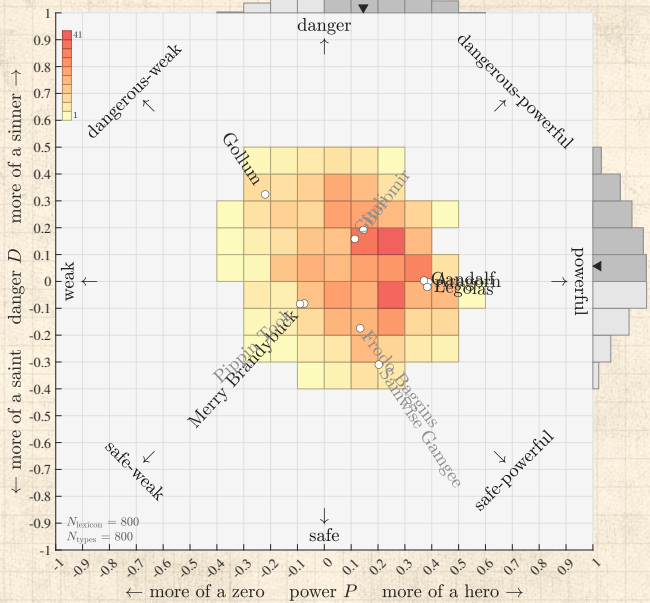
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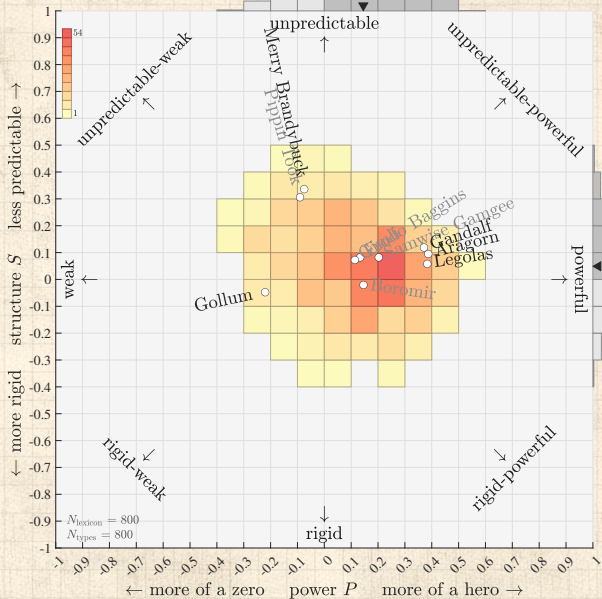
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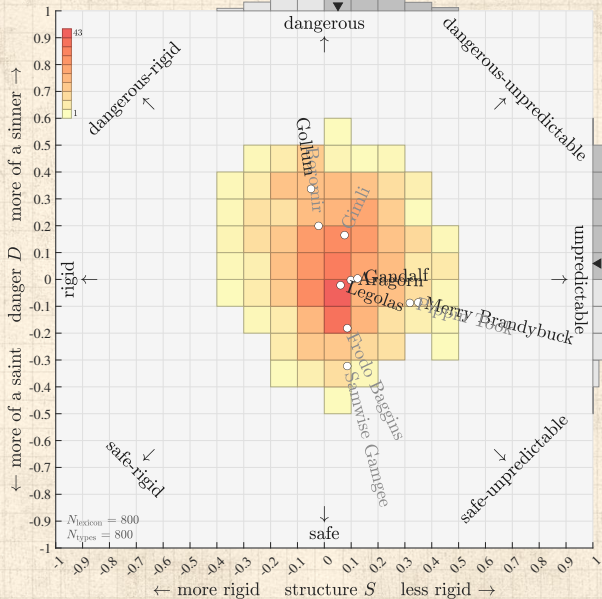
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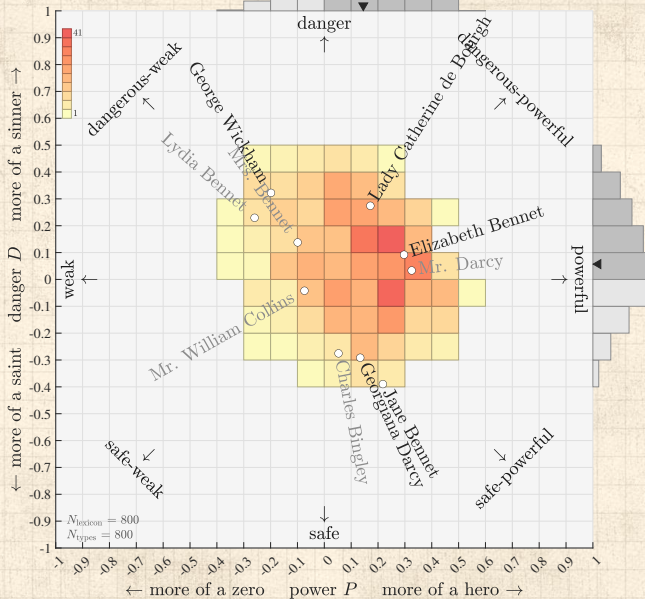
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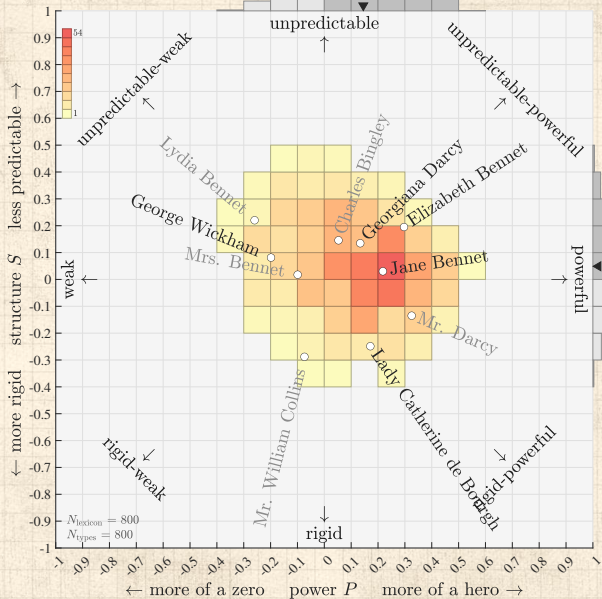
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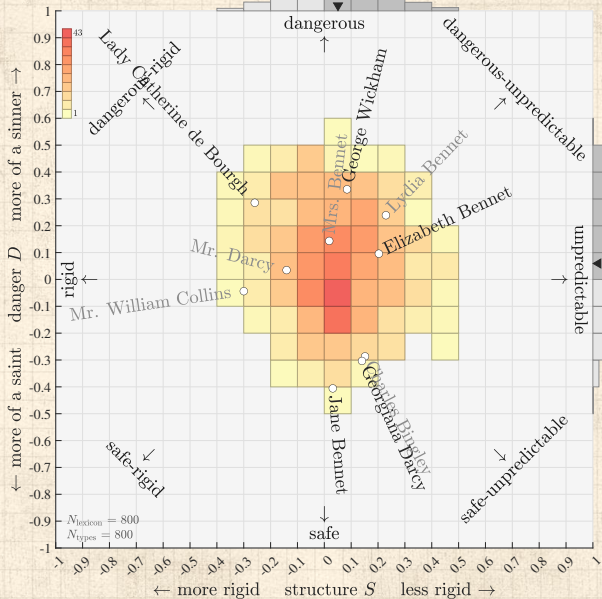
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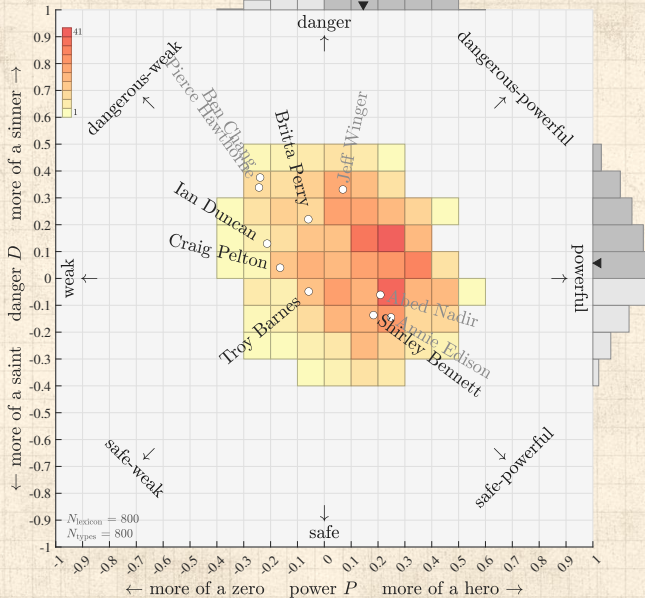
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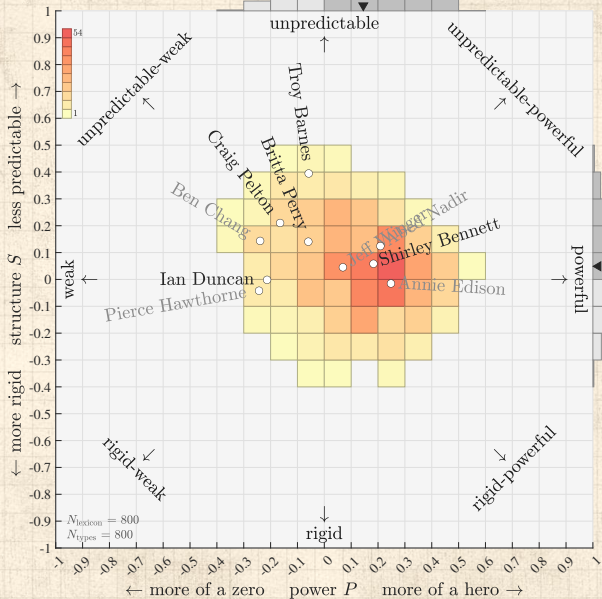
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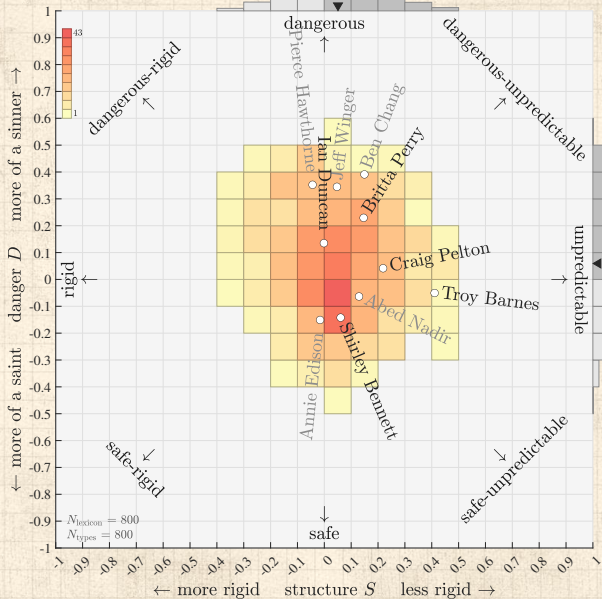
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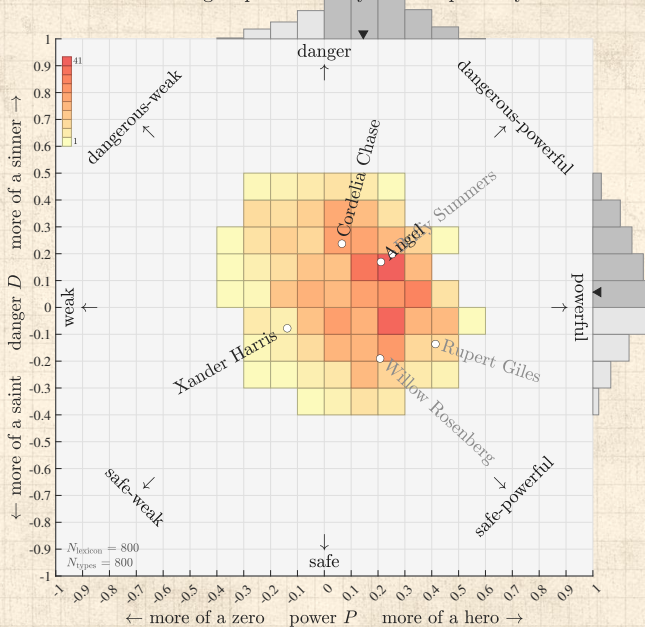
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# Power-Danger space for Buffy the Vampire Slayer



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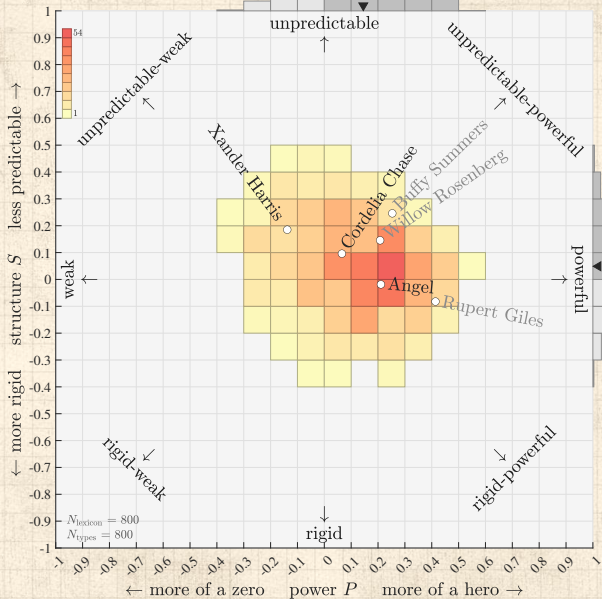
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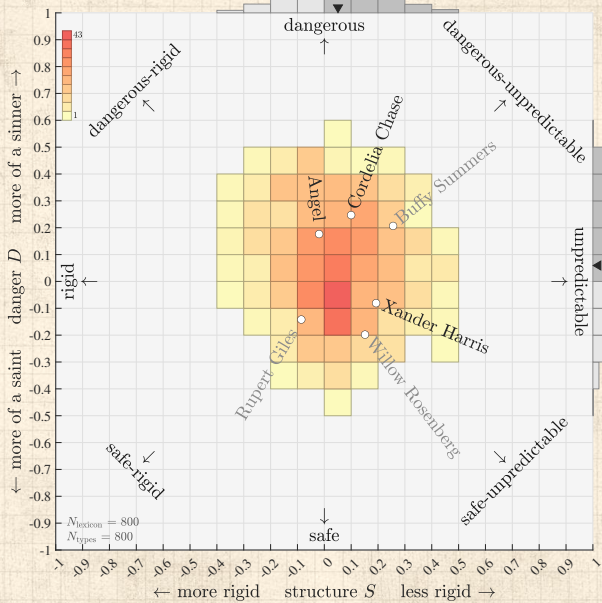
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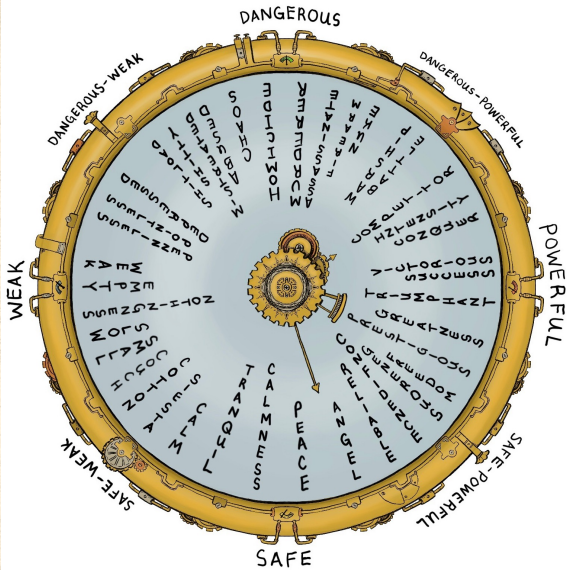


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 $N_{\text{types}} = 800$









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Online appendices: Paper(s), extra figures, flipbooks, code.

<https://storylab.w3.uvm.edu/ousiometrics>

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





























# References IX

[23] W. M. Wundt.  
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