

# Reproducible Self-Publication via PythonT<sub>E</sub>X

Introduction and Reference Slides

[ [github.com/TheChymera/RepSeP](https://github.com/TheChymera/RepSeP) ]

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# Publish From Code, Openly.

- ▶ Transparency → verifiability.
- ▶ Reproducibility → hackability.
- ▶ Version management support:
  - ▶ `diff`-ability.
  - ▶ `blame`-ability.

# Publish in a Distributed Model, Free.

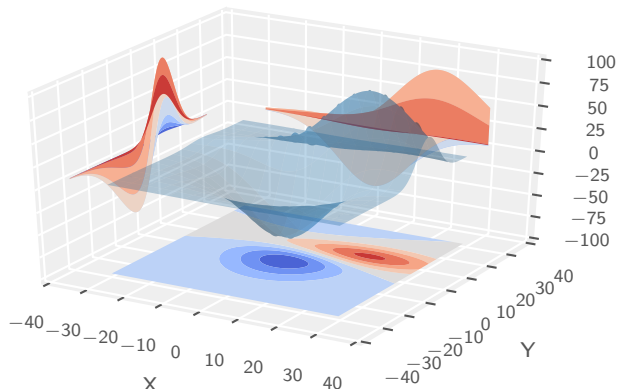
- ▶ No entry barrier → citizen science.
- ▶ No institutional bias → free science.
- ▶ *Less* publication bias → honest science.
- ▶ “Direct Market Access”.

# Publish, in a Presentable Format.

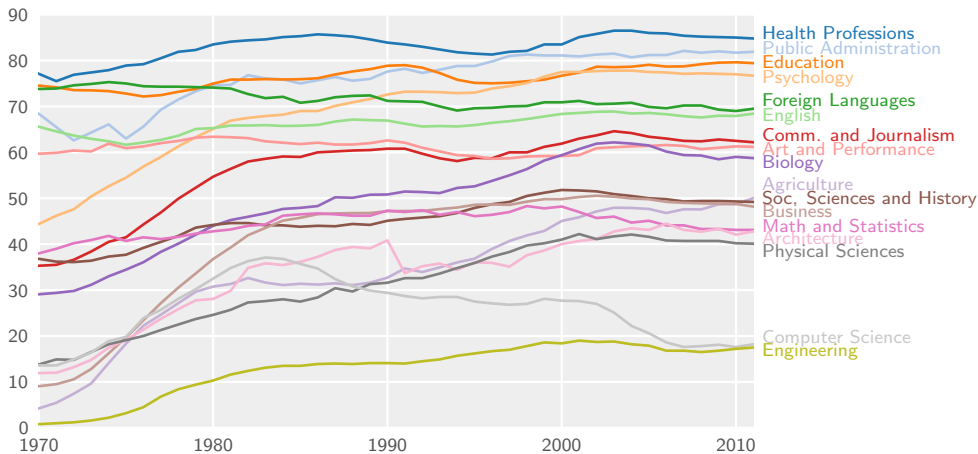
- ▶ Article.
- ▶ Poster.
- ▶ Slides.



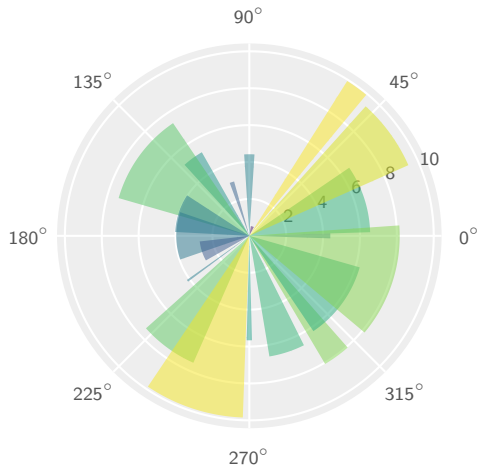
(“Notebooks” integrate poorly with both presentation and development.)



A 3D plot.



Percentage of Bachelor's degrees conferred to women in the U.S.A. by major (1970-2011).



A radar plot.

	Cage ID	Period [days]	Sucrose Bottle Position	Sucrose Concentration	Sucrose Preference Ratio	Treatment
0	32	0 to 2	left	1	0.700000	Fluoxetine
1	32	2 to 4	right	1	0.729032	Fluoxetine
2	32	4 to 6	left	1	0.788820	Fluoxetine
3	33	0 to 2	left	1	0.756098	Fluoxetine
4	33	2 to 4	right	1	0.595041	Fluoxetine
5	33	4 to 6	left	1	0.669492	Fluoxetine
6	34	0 to 2	left	1	0.656934	Control
7	34	2 to 4	right	1	0.645455	Control
8	34	4 to 6	left	1	0.574074	Control
9	35	0 to 2	left	1	0.687500	Control
10	35	2 to 4	right	1	0.672566	Control
11	35	4 to 6	left	1	0.742424	Control
12	36	0 to 2	left	1	0.701571	Control
13	36	2 to 4	right	1	0.647541	Control
14	36	4 to 6	left	1	0.725191	Control

Sucrose preference table.



# Sometimes Less is More

$$F_{4,26} = 7.02, \quad p = 5.6 \times 10^{-4}$$

# Typesetting the Previous Radar Plot

```
\py{  
  pytex_fig('scripts/radar.py',  
    label='radar',  
    caption='A radar plot.',  
  )  
}
```

# Typesetting the Previous Table

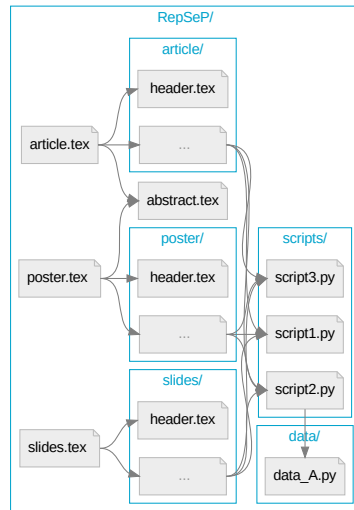
```
\py{  
  pytex_tab('scripts/small_table.py',  
    label='sp',  
    caption='Sucrose preference table.',  
    options='\\tiny',  
    data='data/sucrosepreference.csv',  
  )  
}
```

# Typesetting the Previous Inline Statistic

```
\py{  
  pytex_printonly('scripts/drs_activityANOVA.py')  
}
```

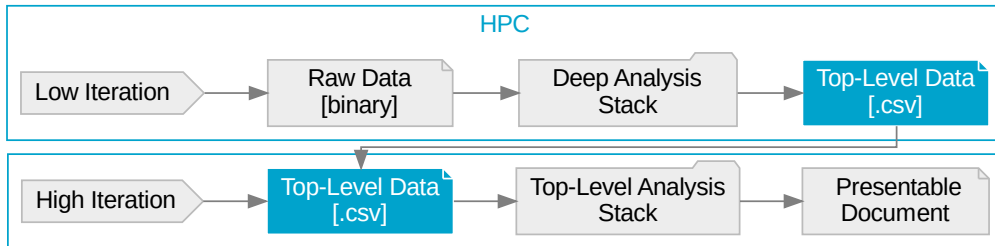
# The Framework Topology

- ▶ Reduced information duplication.
- ▶ Continuous development support.



# The Workflow

- ▶ Asynchronous offloading for time-consuming analysis.
- ▶ Separate packaging for deep analysis stacks.



# Minimal First-Level Dependencies

```
dev-python/matplotlib
dev-python/numpy
dev-python/pandas
>=dev-python/statsmodels-0.9.0
>=dev-tex/pythontex-0.16
dev-texlive/texlive-latex
media-gfx/graphviz
"
```

Following the Package Manager Standard (PMS):

- ▶ Because dependency graphs should never be managed ad hoc.

# Co-Author the Reference Implementation

- ▶ The `article.tex` reference document is still in early draft.
- ▶ You can contribute, fork, and publish it however you want.



# Gain the Best Exposure for Your most Underexposed Work

- Pay-for-Paywall vs. “Direct Market Access”.



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