Reproducible Self-Publication via PythonTeX

Introduction and Reference Slides
[github.com/TheChymera/RepSeP]

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Publish From Code, Openly.

- ▸ Transparency $\longrightarrow$ verifiability.
- ▸ Reproducibility $\longrightarrow$ hackability.
- ▸ Version management support:
  - ▸ `diff` -ability.
  - ▸ `blame` -ability.
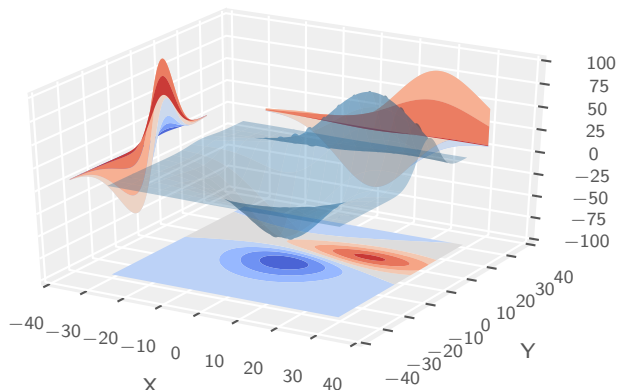
Publish in a Distributed Model, Free.

- ▶ No entry barrier ⟶ citizen science.
- ▶ No institutional bias ⟶ free science.
- ▶ *Less* publication bias ⟶ honest science.
- ▶ "Direct Market Access".

Publishing
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Free and Open Scientific Publishing

Publish, in a Presentable Format.

- ▶ Article.
- ▶ Poster.
- ▶ Slides.

pythonTEX

("Notebooks" integrate poorly with both presentation and development.)

Publishing
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Create All Graphic Elements Directly from Source.

A 3D plot.

Publishing
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Create All Graphic Elements Directly from Source.
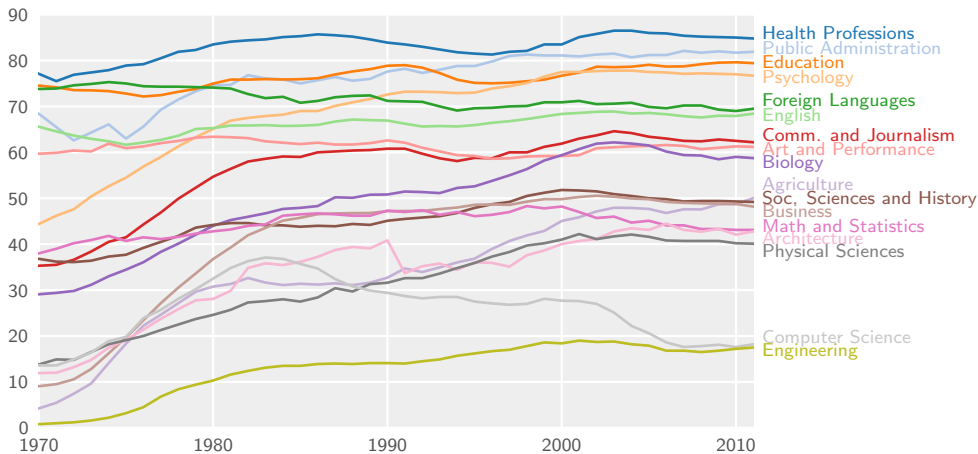
Percentage of Bachelor's degrees conferred to women in the U.S.A. by major (1970-2011).

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Reproducible Self-Publication via PythonTEX — Introduction and Reference Slides

Publishing
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Create All Graphic Elements Directly from Source.

A radar plot.

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Create All Graphic Elements Directly from Source.
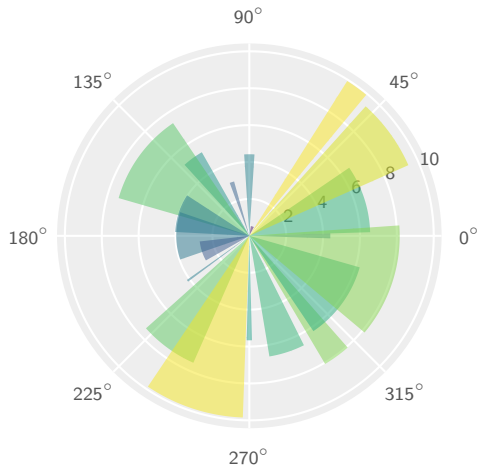
	Cage ID	Period [days]	Sucrose Bottle Position	Sucrose Concentration	Sucrose Preference Ratio	Treatment
0	32	0 to 2	left	1	0.700000	Fluoxetine
1	32	2 to 4	right	1	0.729032	Fluoxetine
2	32	4 to 6	left	1	0.788820	Fluoxetine
3	33	0 to 2	left	1	0.756098	Fluoxetine
4	33	2 to 4	right	1	0.595041	Fluoxetine
5	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

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

Typesetting the Previous Radar Plot

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

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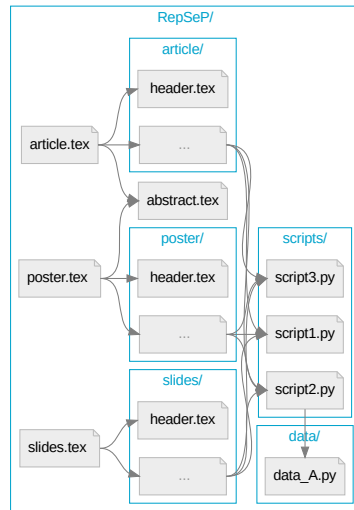
```
\py{
    pytex_tab('scripts/small_table.py',
        label='sp',
        caption='Sucrose preference table.',
        options='\\tiny',
        data='data/sucrosepreference.csv',
        )
}
```

Typesetting the Previous Inline Statistic

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

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The Code, Workflow, and Environment Behind the Curtain

The Framework Topology

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

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The Code, Workflow, and Environment Behind the Curtain

The Workflow

- ▶ Asynchronous offloading for time-consuming analysis.
- ▶ Separate packaging for deep analysis stacks.
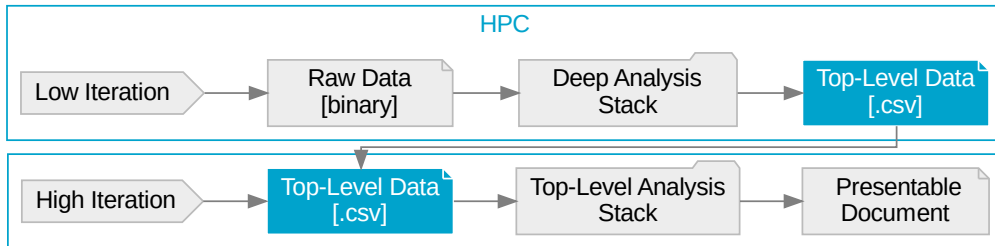
Minimal First-Level Dependencies

```
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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How You Can Benefit from This Right Now.

Gain the Best Exposure for Your most Underexposed Work

- ▶ Pay-for-Paywall vs. "Direct Market Access".