

Managing your PhD

Tools and Techniques for Bringing Order to a Chaotic PhD



JOHNS HOPKINS
LIBRARIES

Data Services

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WHO AM I?

- Completed Bioinnovation Ph.D. 2019
- Currently a Data and Visualization Librarian at JHU Data Services
- Hopelessly Scatterbrained



The Talk I Wish I Had

- How to be **effectively** productive during the Ph.D. process
- Tools and techniques to enable a productive Ph.D.
- Everything I wish I had known about during my Ph.D.



“Reorganizing papers that he has no serious plans to read, the grad student engages in barely productive procrastination.”

- Lego Grad Student

Knowledge Management

- Write **EVERYTHING** down. You may think you will remember. You probably won't.
- Plan to publish.
- Find a system that works for you, then stick to it.



“Suffering from writer’s block, the grad student stares at a screen as empty as his hopes and dreams..”

- Lego Grad Student

Adapting the GTD system

1

CAPTURE

Collect papers, tasks, ideas, and reminders.
This is your inbox. It should be emptied after process.

2

PROCESS

Review each item, and ask yourself what is this? Tasks are atomic.

3

ORGANIZE

File it. Put everything in its place.

4

REFLECT

Review regularly. Perform a daily reflection, set your next day's tasks.

5

DO

Just do it!

Finding Focus

- On a daily/weekly basis document your tasks for the week
- Use SMART Goals:
 - Specific
 - Measurable
 - Attainable
 - Relevant
 - Timely
- Chunk out your tasks
- Remove distractions
- Identify when you are at your most effective
- Establish a routine
- Set a deadline



Finding Focus

- Use the **Pomodoro** technique
 - Work in 25 minute increments
 - Enjoy a 5 minute rest per increment
 - Every 4 pomodoros, take a 15-30 minute break
- Reduces impact of internal and external interruptions
- Available as smartphone app, browser plugin, desktop app, or get a real timer!



Implementing the GTD system

CAPTURE

Capture Articles:

- Zotero
- Mendeley
- Endnote

Use Alerts:

- PubCrawler
- Google Scholar
- Scopus

Capture Ideas:

- Evernote
- Trello
- OneNote
- Emacs Org-mode
- Physical Notebook

PROCESS

Literature Review

- Reference manager + annotation software
 - LiquidText
 - MarginNote
 - Foxit
 - Notability
 - Goodnotes
 - PaperShip

TODO Apps

- Trello
- Microsoft Planner
- OmniFocus
- Todoist
- Emacs Org-mode

ORGANIZE

File it. Get it out of your inbox.

REFLECT

Review regularly. Perform a daily reflection, set you next days tasks.

DO

Just do it!

It's ok to use proprietary tools as long as you can export to a usable, plaintext format, and you do so fairly regularly.

The best system is the one you use.

Trello

The screenshot displays the Trello web interface for a project board named "PhD Research". The interface is organized into columns representing different stages of the project:

- Inbox:** Contains five cards with tasks such as "Respond to Mark about Brain TDA", "Pull the case with the 'frozen like' artifacts...", "Evaluate whether therapy, such as androgen therapy...", "Evaluate clusters identified in 60 ROI study...", and "Identify common HG-PIN stains in Durham VA patient set".
- In Progress:** Contains three cards: "Follow up with Cyverse on common data question", "Setup Cyverse for SPIM", and "Follow up w/ Ramona on Cyverse call".
- Ideas:** Contains six cards, each labeled "2D TDA", with tasks like "Implement clustering methods described in meetings.org", "Identify means to compare distributions of distributions", "Explore ring of functions for transforming barcode to vector", "Identify complexity (big O) of Wasserstein and Bottleneck", "Evaluate stat_density2d as an alternative to intensity plots", and "Evaluate Euler characteristic as feature".
- SPIM 3D Paper:** Contains three cards: "Get Stackstreamer implemented", "Evaluate 3D segmentation approaches outside of Amira", and "Migrate persistent entropy evernote to markdown".
- CNN-Ensemble Paper:** Contains two cards: "Implement HDF5 container for ROI, PDs, and PIFs" and "Evaluate the value of HDF5 over a PyTorch dataset class".
- Annotation-Dev:** Contains four cards: "Features to build", "Populate Girder w begin collecting a implement proces annotations.", "Begin structuring define explicit styl", and "Add Carola to Rep".

The interface includes a top navigation bar with a search bar, a "New stuff!" button, and a "Trello" logo. The "PhD Research" board is selected, and the "Personal" tab is active. The "Inbox" column is currently selected, showing a list of cards with their titles and descriptions. The "Add another card" button is visible at the bottom of each column.

Setup Alerts



*It goes to the library
- you go to the pub(TM)*

- [About](#)
- [Download](#)
- [Sample Results](#)
- [News](#)
- [FAQ](#)
- [Contact](#)

PubCrawler - an Update Alerting Service for PubMed and GenBank

If you have signed up more than a year ago and haven't logged in since then, we need you to explicitly confirm your PubCrawler registration due to new European regulations (**GDPR**).

To do so, please click on the link that was sent to you by e-mail.

Without confirmation your PubCrawler account will be suspended and eventually deleted.

Please contact pubcrawlerhelp@gmail.com for more information.

PubCrawler is a free "alerting" service that scans **daily updates** to the **NCBI** Medline (PubMed) and GenBank databases. PubCrawler helps keeping scientists informed of the **current contents** of Medline and GenBank, by listing new database entries that match their research interests.

New users - [join PubCrawler's Web service:](#)

It's free! Choose a username (**case-sensitive!**) and click the 'join' button.

username:

Existing users - [log in:](#)

If you have 'Easy Check' activated, click here:

Otherwise, enter your username and password and click the 'log in' button.

username:

password:



Principles of MEDLINE Subject Indexing

Subject indexing includes:

- reviewing a journal article (or other material such as a letter or editorial)
- determining its subject content, and
- describing that content using a controlled vocabulary.

Use a Reference Manager



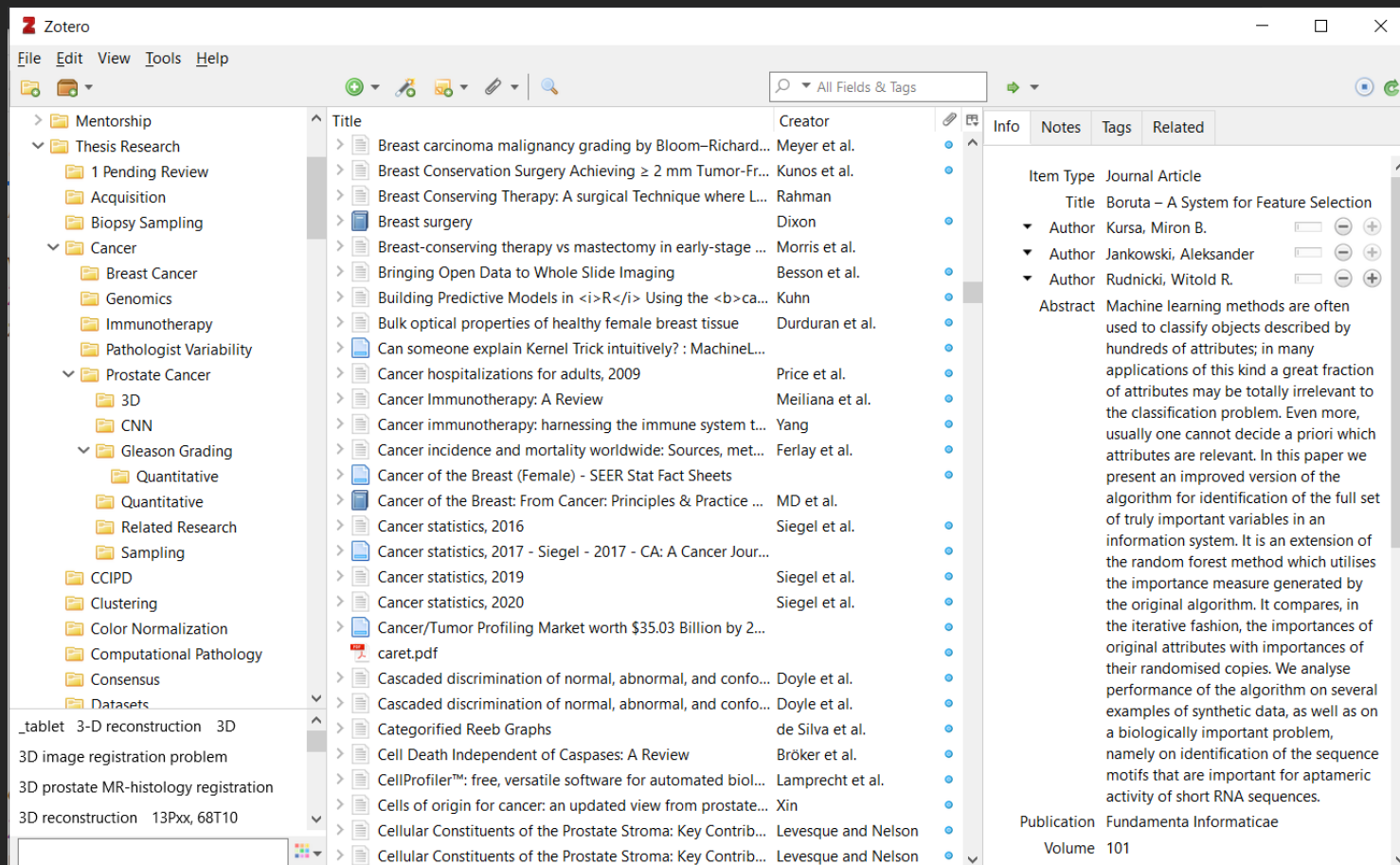
Zotero

The screenshot shows the Zotero desktop application. The left sidebar contains a tree view of the library, with folders such as 'Mentorship', 'Thesis Research', 'Cancer', 'Prostate Cancer', and 'CCIPD'. The main pane displays a list of references with columns for Title, Creator, and Item Type. The right pane shows details for a selected item, including its title, authors, and abstract.

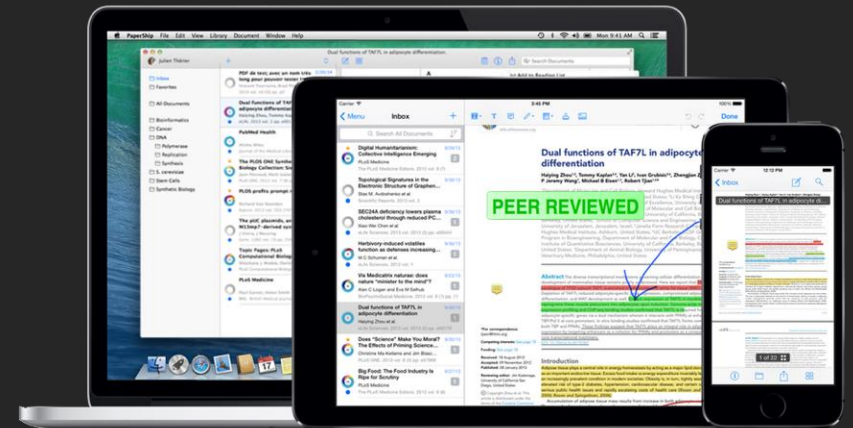
The screenshot shows the Zotero Connector browser extension menu. The menu is open, showing options like 'Save to Zotero (Wikipedia)', 'Save to Zotero (DOI)', 'Save to Zotero (Web Page)', 'Options', 'Remove from Chrome...', 'Hide in Chrome Menu', 'Manage Extensions', and 'Inspect Popup'.

The screenshot shows a Microsoft Word document with the Zotero tab active in the ribbon. The 'Bibliography' button is highlighted, and a red box highlights it. A red text overlay reads 'create your bibliography with one click'. The document content shows a list of references.

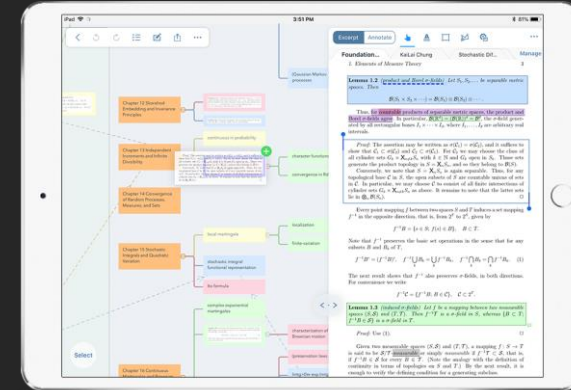
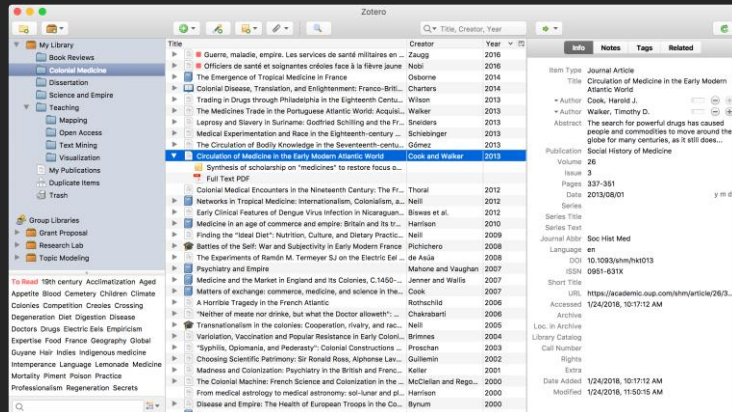
Use a Reference Manager



PaperShip



An Example Annotation Workflow



```
)  
;; A list of packages that cannot be updated.  
dotspacemacs-frozen-packages '()  
;; A list of packages that will not be installed and loaded.  
dotspacemacs-excluded-packages '(vi-tilde-fringe org-projectile  
doom-wilmersdorf-theme)  
;; Defines the behaviour of Spacemacs when installing packages.  
;; Possible values are `used-only`, `used-but-keep-unused` and `all`.  
;; `used-only` installs only explicitly used packages and uninstall any  
;; unused packages as well as their unused dependencies.  
;; `used-but-keep-unused` install  
;; them if they become unused.  
;; Spacemacs and never uninsta  
dotspacemacs-install-packages '  
#+END_SRC
```

o The Org Layer

This is the layer that gives you org-n
other parts of the config. The Space
keyboard shortcuts but here are the o
with **ALT**, **SHIFT**, or **CTRL**, you have

* Tasks, scheduling, and a

✿ Current week agenda – SPC m a t

The buffer window that you run this in shows everything you have scheduled for the week (top right in the picture above). The asterisk makes it a "sticky" agenda view, meaning you can call a different agenda command (such as the one below) in another window and still see this one.

✿ List of tasks – SPC m a t

The buffer window you run this in shows a list of tasks identified by keywords like "TODO" (bottom right in the picture above). I've added a couple of my own keywords to this list.

Week-agenda (W02):

Monday 6 January 2020 W02

```
phd: Sched.43x: RUNNING w.r.t. the next round of experiments: :sequence_selection:  
phd: Sched. 3x: TODO Send iTSP :redtape:  
phd: Scheduled: RUNNING Extract sequence features :sequence_selection:  
phd: Scheduled: RUNNING Extract structure features :sequence_selection:
```

Tuesday 7 January 2020

```
phd: Scheduled: TODO Predict cation :sequence_selection:  
phd: Scheduled: TODO Drill :turkish:
```

Wednesday 8 January 2020

```
phd: Scheduled: TODO Drill :turkish:
```



Org-Mode

**Organise* your life,
/in plain text/*

```
phd: IDEA Improvement (shortlist)  
phd: IDEA Master thesis projects  
phd: IDEA
```

```
:sequence_selection:
```

```
quoth: TODO add tests :personal:  
rust-ray-tracing: TODO Fix subsurface sphere :personal:  
rust-ray-tracing: TODO Fix image texture mapping  
:personal:
```



```

)
;; A list of packages that cannot be updated.
dotspacemacs-frozen-packages '()
;; A list of packages that will not be installed and loaded.
dotspacemacs-excluded-packages '(vi-tilde-fringe org-projectile
doom-wilmersdorf-theme)

;; Defines the behaviour of Spacemacs when installing packages.
;; Possible values are `used-only', `used-but-keep-unused' and `all'.
;; `used-only' installs only explicitly used packages and uninstall any
;; unused packages as well as their unused dependencies.
;; `used-but-keep-unused' installs only the used packages but won't uninstall
;; them if they become unused. `all' installs *all* packages supported by
;; Spacemacs and never uninstall them. (default is `used-only')
dotspacemacs-install-packages 'used-only))

#+END_SRC

```

o The Org Layer

This is the layer that gives you org-mode functionality. There'll be a lot more on this in other parts of the config. The [Spacemacs org layer page](#) has a crazy amount of keyboard shortcuts but here are the ones that I actually use. (For commands not starting with **ALT**, **SHIFT**, or **CTRL**, you have to press **ESC** first)

* Tasks, scheduling, and agenda

☼ Current week agenda – **SPC m a * a**

The buffer window that you run this in shows everything you have scheduled for the week (top right in the picture above). The asterisk makes it a "sticky" agenda view, meaning you can call a different agenda command (such as the one below) in another window and still see this one.

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The buffer window you run this in shows a list of tasks identified by keywords like **"TODO"** (bottom right in the picture above). I've added a couple of my own keywords to this list.

Week-agenda (W02):

```

Monday 6 January 2020 W02
phd: Sched.43x: RUNNING w.r.t. the next round of experiments: :sequence_selection:
phd: Sched. 3x: TODO Send iTSP :redtape:
phd: Scheduled: RUNNING Extract sequence features :sequence_selection:
phd: Scheduled: RUNNING Extract structure features :sequence_selection:

Tuesday 7 January 2020
phd: Scheduled: TODO Predict cation :sequence_selection:
phd: Scheduled: TODO Drill :turkish:

Wednesday 8 January 2020
phd: Scheduled: TODO Drill :turkish:

Thursday 9 January 2020
phd: Scheduled: TODO Drill :turkish:
phd: Scheduled: MEETING

Friday 10 January 2020
phd: Scheduled: TODO Drill :turkish:

Saturday 11 January 2020
phd: Scheduled: TODO Drill :turkish:

Sunday 12 January 2020
phd: Scheduled: TODO Drill :turkish:

```

```

@ % 1.4k *Org Agenda(a)* Org-Agenda Week Ddl Grid Habit utf-8 | 12: 0 All
phd: TODO Get started on
phd: TODO Run [3/4] :sequence_selection:
phd: TODO Receptors binding

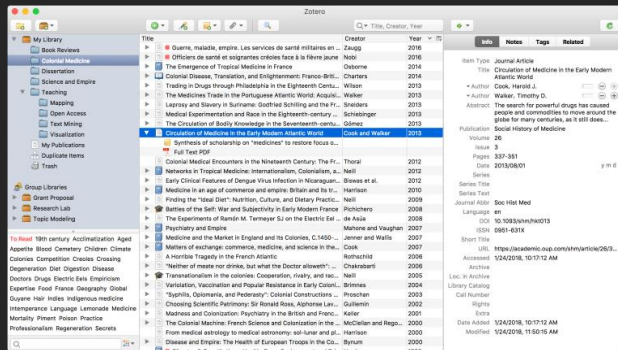
phd: IDEA Knowledge (keep track of dates)
phd: IDEA Improvement (shortlist)
phd: IDEA Master thesis projects
phd: IDEA
:sequence_selection:
quoht: TODO add tests :personal:
rust-ray-tracing: TODO Fix subsurface sphere :personal:
rust-ray-tracing: TODO Fix image texture mapping
:personal:

```

A Plaintext (GTD) Research Workflow



Zotero



Emacs



Org-Mode and Org-Ref



L^AT_EX



The Kitchen Research Group

Chemical Engineering at Carnegie Mellon University

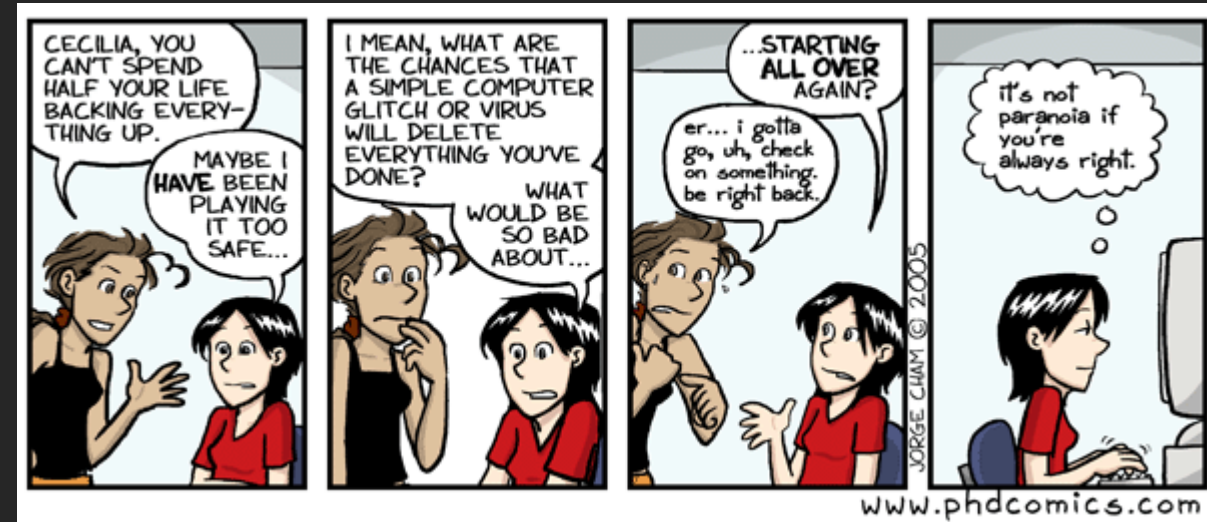
Use Version Control

- Its not just for software engineers.
- Its built in to Google Docs (WYSIWG Editor) as well as Overleaf (Collaborative LaTeX editor)
- If you are using plaintext, use a versioning control system.
 - Git + Github is the most popular combination



Backup Your Data

- 3-2-1
 - Keep at least **three** copies of your data
 - Store **two** backup copies on different storage medium
 - **One** of them should be located offsite
- Use a cloud storage service
 - Box, Dropbox, OneDrive, etc.

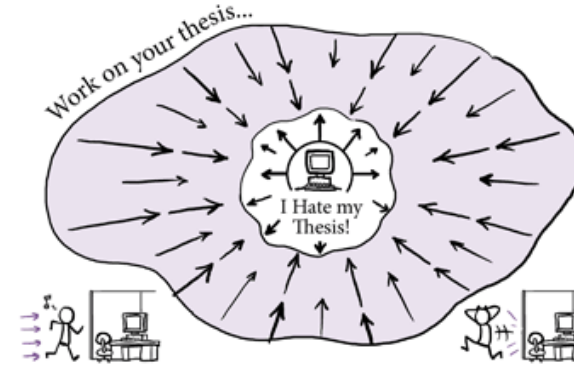


Questions?

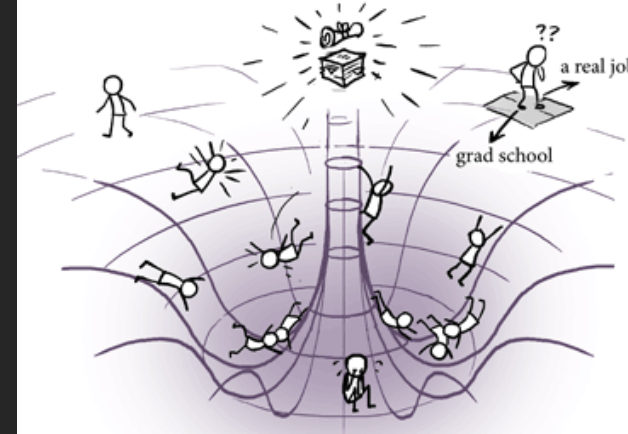
THE THESIS REPULSOR FIELD

The Thesis Repulsor Field (TRF) is a generalized model of the forces experienced by an individual in the final stages of graduate space-time*.

It is characterized by an attractor vector field directed towards completion of the thesis but with an intense repulsive singularity at its origin.



The resulting potential well of wasted potential acts as grad students follow the gradient in the perceived direction of least work:

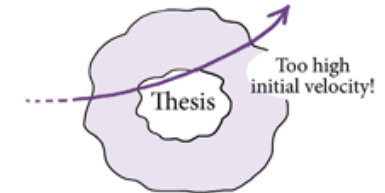


In reality, TRF is not an actual force, but rather a distortion of the mindspace continuum, in which grad students are simply responding to the curvature of their own neuroses.

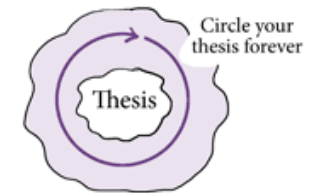
*Graduate space-time is just like real space-time, but with added imaginary dimensions.

Several trajectories are possible due to this vector field:

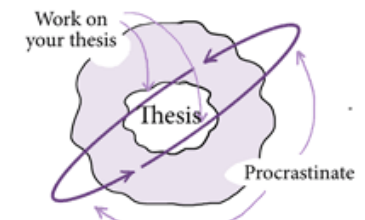
Complete Repulsion



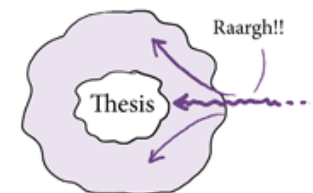
Infinite Orbit



Periodic Productivity



Grin and bear it



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