



edupsynd theory
for python hackers

(pycon us 2013)
follow along at bit.ly/pycon-edupsynd

MEL CHUA
academic
hacker
academic



...PLACE
OF WOMEN

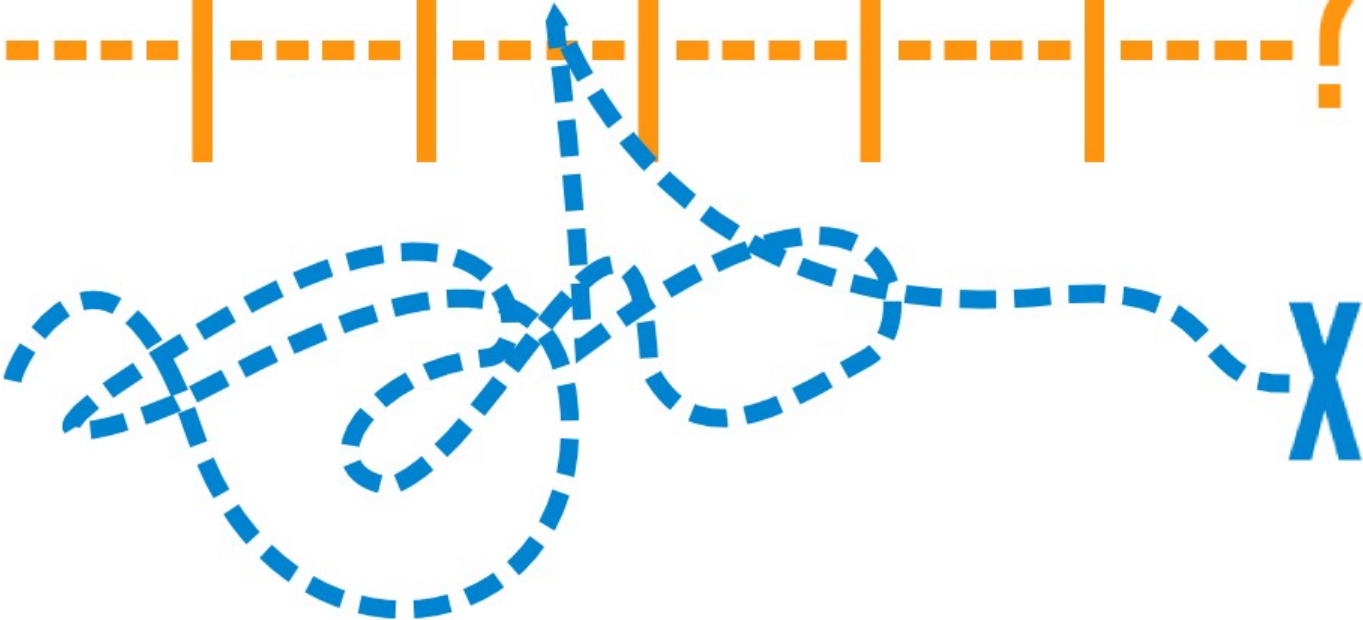


WAT

ACAD



FOSS





**ure
doin
it
rite**

Example: test-driven development

```
def factorial(n):
```

```
    """Return the factorial of n, an exact integer  $\geq 0$ .
```

```
    >>> [factorial(n) for n in range(6)]
```

```
[1, 1, 2, 6, 24, 120]"""
```

```
    result = 1
```

```
    factor = 2
```

```
    while factor  $\leq$  n:
```

```
        result *= factor
```

```
        factor += 1
```

```
    return result
```

(shamelessly stolen from

<http://docs.python.org/2/library/doctest.html>)

Example: test-driven development

```
def curriculum(student):
```

```
    """Students should be able to analyze the relationship between  
    a doctest, the function under test, and the test output.
```

```
    >>> [curriculum(student) for student in class]
```

```
    [True, True, True, True, True]"""
```

```
    fun_activity_thing()
```

```
    student.doctestability = True
```

```
    return student.doctestability
```

Example: test-driven development

```
def curriculum(student):
```

content

```
    """Students should be able to analyze the relationship between  
    a doctest, the function under test, and the test output.
```

```
>>> [curriculum(student) for student in class]
```

```
[True, True, True, True, True]"""
```

assessment

```
    fun_activity_thing()
```

pedagogy

```
    student.doctestability = True
```

```
    return student.doctestability
```

Further reading: Understanding By Design

Example: test-driven development

def curriculum(student): **Bloom's taxonomy**

"""Students should be able to **analyze** the relationship between a doctest, the function under test, and the test output.

>>> [curriculum(student) for student in class]

[True, True, True, True, True]"""

fun_activity_thing()

student.doctestability = True

return student.doctestability

Bloom's Taxonomy

create

evaluate

analyze

apply

understand

remember

Bloom's Taxonomy, Cognitive

create

evaluate

analyze

apply

understand

remember

Bloom's Taxonomy, Affective

characterize

organize

value

respond

receive

Example: test-driven development

```
def curriculum(student):
```

```
    """Students should be able to analyze the relationship between  
    a doctest, the function under test, and the test output.
```

```
    >>> [curriculum(student) for student in class]
```

```
    [True, True, True, True, True]"""
```

behaviorism

(we'll come back to this in a moment)

```
    fun_activity_thing()
```

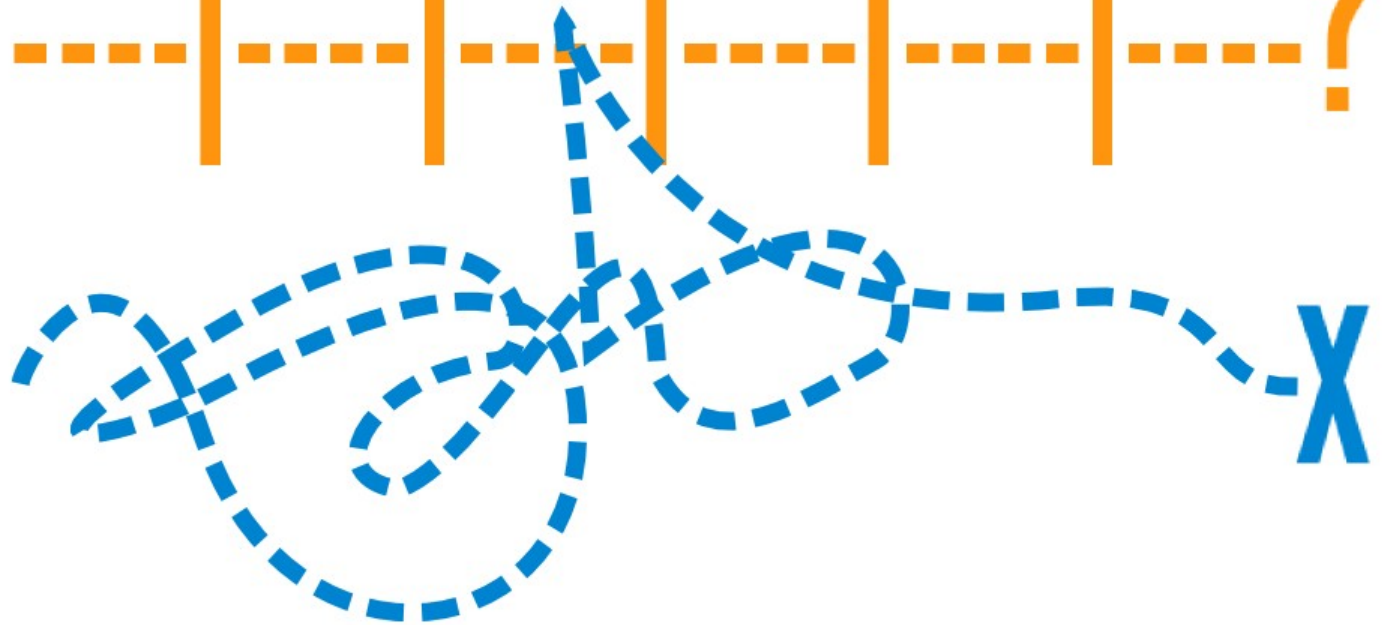
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    student.doctestability = True
```

```
    return student.doctestability
```

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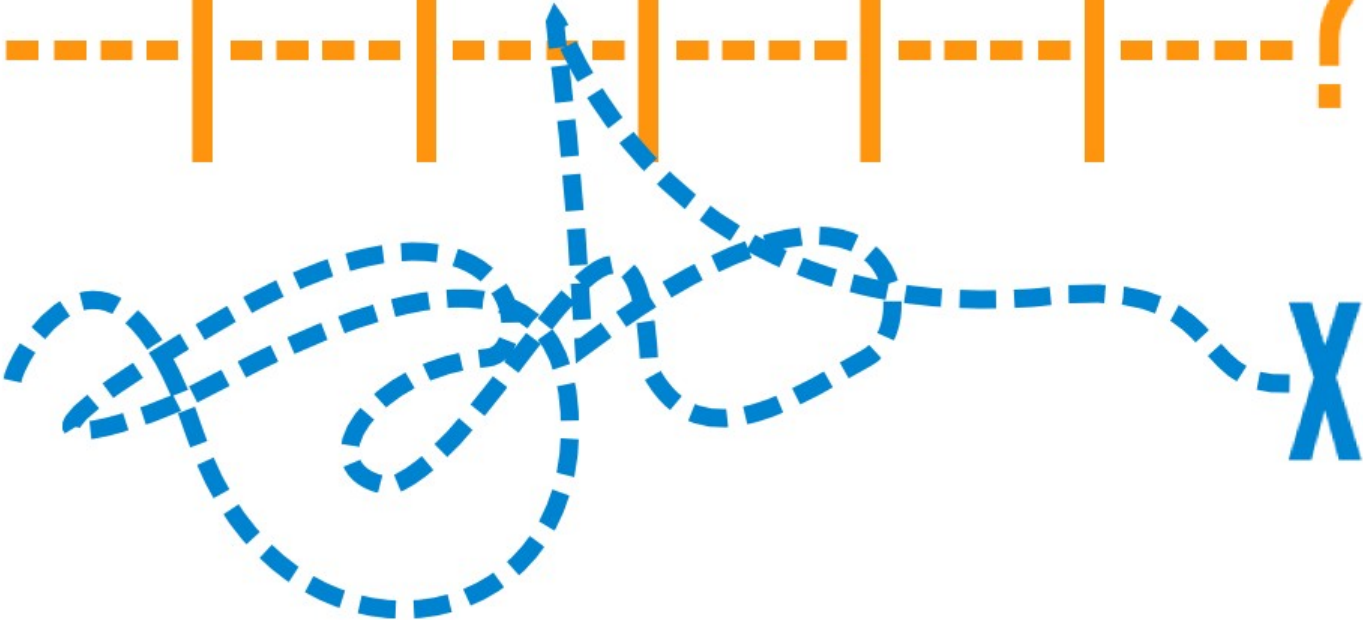
the world is socially constructed

**the world is socially constructed
(of course it is)**

ACAD



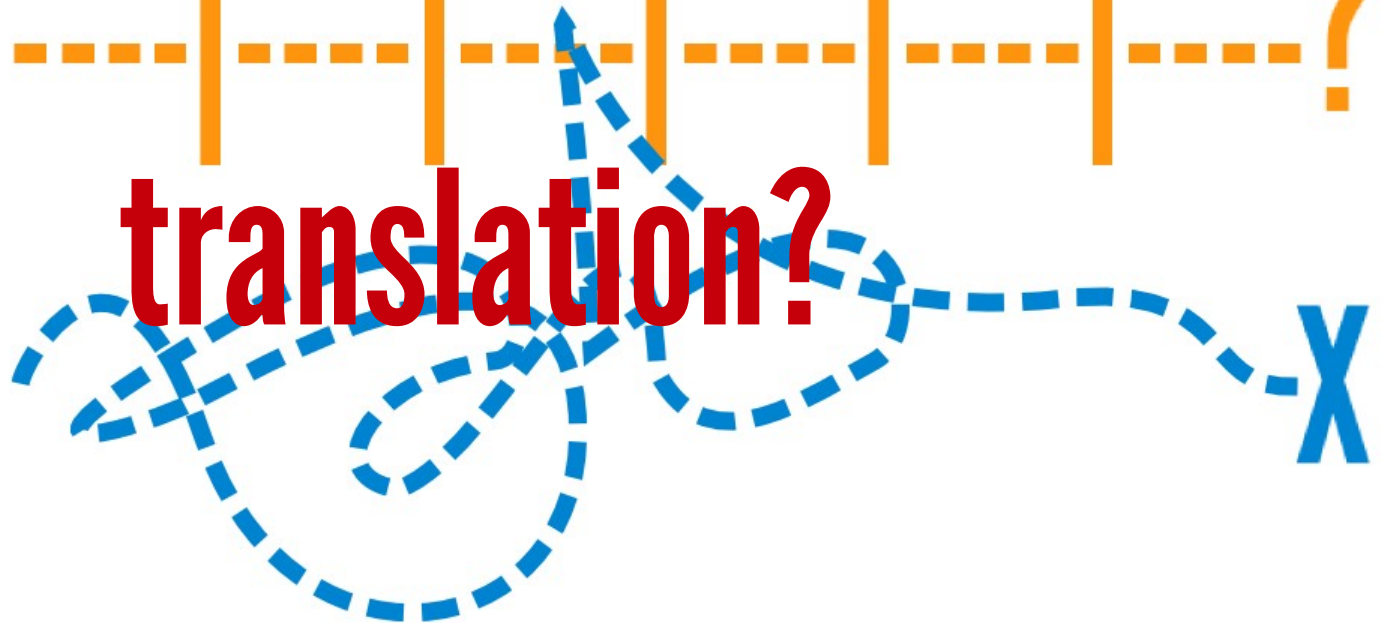
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**accidental learning in cognitive
apprenticeships within authentic
communities of practice with
metacognition models and
formative feedback to develop
self-efficacy and self-
determination**

```
7:30 < CodeBlock> :q
7:30 -!- stickster_afk is now known as stickster
7:30 < CodeBlock> gah
7:31 -!- jdieter [~jdieter@194.126.28.10] has quit [Remote host closed the connection]
7:31 < mmcgrath> .bug 195265
7:31 < zodbot> mmcgrath: Bug 195265 xinetd doesn't listen on IPv6 by default. -
      https://bugzilla.redhat.com/show_bug.cgi?id=195265
7:33 -!- You're now known as mchua
7:37 < mmcgrath> 9418
7:39 -!- wakko666 [~blentz@sealnat.classmates.com] has quit [Quit: Ex-Chat]
7:39 -!- wakko666 [~blentz@sealnat.classmates.com] has joined #fedora-admin
7:41 < CodeBlock> mmcgrath: how do I test it (What's the url for stg's fas?)
7:41 < mmcgrath> https://admin.stg.fedoraproject.org/accounts/
7:41 < mmcgrath> .headers -pos:/usr/share/doc/httpd-2.0.53-1.el5/usr/share/doc/httpd-2.0.53-1.el5/html/headers.html
7:42 * mmcgrath isn't sure that all actually work in production, suspect db cache could be the problem
7:42 < zodbot> mmcgrath: http://www.fedoraproject.org/wiki/FAQ:Cache
7:42 -!- heffer [~felix@heffer] has joined #fedora-admin
7:42 * CodeBlock can look into it
7:42 * CodeBlock checks headers
7:43 < CodeBlock> Via: 1.1 varnish
7:43 < CodeBlock> \o/
7:43 < mmcgrath> CodeBlock: nah, the real trick, is that actually being cached?
7:44 < ianweller> dgilmore: possible
7:45 < CodeBlock> mmcgrath: no, (I hope) the benefit is the time
7:45 -!- ggruener [~ggruener@ip-109-45-1167.wireless.aon.com] has quit [Connection timeout: 240 seconds]
7:45 < mmcgrath> CodeBlock: ok, so the main problem is actually in how do we want to cache people logged in.
7:45 < mmcgrath> *but*
7:45 < mmcgrath> try some of the other things
7:46 < mmcgrath> those we should cache, or figure out how to cache
7:46 < CodeBlock> mmcgrath: https://admin.stg.fedoraproject.org/accounts/atic/home/fas/css/style.css has the same
      AppTime every time
7:47 < mmcgrath> CodeBlock: good, check that against production
7:47 < mmcgrath> CodeBlock: also, go through the admin.fedoraproject.org/ code and make sure to disable any caching
      that might be going on from apache.
7:48 < CodeBlock> production's AppTime changes every time :)
7:48 < CodeBlock> mmcgrath: alright
7:48 < mmcgrath> good
7:48 < mmcgrath> yet another, pretty automated benefit
```

Accidental learning.

Community of practice.

domain
community
practice





Cognitive apprenticeship.

**model
coach
scaffold
fade**

bit.ly/pycon-cogapp

Dreyfus Model of Skill Acquisition

novice

advanced beginner

competent

proficient

expert

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7:41 < mmcgrath> .headers https://admin.stg.fedoraproject.org/accounts/
7:42 * mmcgrath isn't sure that will actually work, infact I suspect zodbot can't get to it
7:42 < zodbot> mmcgrath: timed out
7:42 -!- heffer [~felix@fedora/heffer] has joined #fedora-admin
7:42 * CodeBlock can load it
7:42 * CodeBlock checks headers
7:43 < CodeBlock> Via: 1.1 varnish
7:43 < CodeBlock> \o/
7:43 < mmcgrath> CodeBlock: now the real trick, is that actually being cached?
7:44 < ianweller> dgilmore: pong
7:45 < CodeBlock> mmcgrath: no :( AppTime is different every time
7:45 -!- ggruener [~ggruner@ip-109-45-5-167.web.vodafone.de] has quit [Ping timeout: 240 seconds]
7:45 < mmcgrath> CodeBlock: ok, so that may be ok actually since we don't want to cache people logged in.
7:45 < mmcgrath> *but*
7:45 < mmcgrath> try some of the css or images.
7:46 < mmcgrath> those we should cache, or figure out how to cache
7:46 < CodeBlock> mmcgrath: https://admin.stg.fedoraproject.org/accounts/static/theme/fas/css/style.css has the sa
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7:48 < mmcgrath> good
7:48 < mmcgrath> yet another, pretty automated benefit
```

**GET HELP
FASTER**

	Wiki	Timeline	Browse Source	View Tickets	New Ticket	Search	Tags
--	----------------------	--------------------------	-------------------------------	-------------------------------------	----------------------------	------------------------	----------------------

{1} Active Tickets (2752 matches)

- List all active tickets by priority.
- Color each row based on priority.
- If a ticket has been accepted, a "*" is appended after the owner's name

Ticket	Summary	Component	Severity	Owner	Cr
#429	charset error with mysql	DbAuthPlugin	blocker	brad	04
#579	does not support UTF	GetMacro	blocker	GraemeWorthy	08
#647	RequestTracker import so	AbbrMacro	blocker	anonymous	08
#831	Case sensitive Authentication, and case sensitive authorization.	ScrumMacro	blocker	pacopablo	10
#1265	AttributeError: 'unicode' object has no attribute 'decode'	TinyMceWikiPlugin	blocker	hirobe	03
#1308	create new wiki page	IntraBlogTheme	blocker	anonymous	03
#1573	Datamover does not find any Trac environments	DatamoverPlugin	blocker	coderranger	05
#1617	Calendar time data did not match	CalendarPlugin	blocker	ant_39 *	06
#1983	SQLITE EROR	TeamtracIntegration	blocker	roman	08
#2057	Genshi Template not provided with ScrumPlugin	ScrumPlugin	blocker	masariello	08
#2134	Choose users not in the list but with a simple form	PeerReviewPlugin	blocker	djeebus	10
#2307	how to uninstall completely	CalendarPlugin	blocker	ant_39	11
#2582	Error: ... failedformat -> requires a mapping	AddressPlugin	blocker	rottenchester@gmail.com	01
#2841	Users cannot be added to created peer review	PeerReviewPlugin	blocker	proofek	04
#3037	Cannot upgrade database	PlatformDeploymentPlugin	blocker	noone	08
#3064	[Patch] Plugin does not show up in trac admin	SearchAttachmentsPlugin	blocker	deltroo	08
#3088	Error in MySQL Query Syntax	StractisticsPlugin	blocker	mjrecena@gmv.com	08
#3133	AttributeError: ScannerError instance has no attribute 'message'	GanttChartPlugin	blocker	malsmith	08
#3233	[Patch] Infinite redirect loop after resetting the password	AccountManagerPlugin	blocker	pacopablo	08
#3393	Cannot add user when use LDAP authentication with apache	PeerReviewPlugin	blocker	anonymous	07
#3712	Nothing in reviewers list of create code review page	PeerReviewPlugin	blocker	proofek	08
#3740	This theme breaks app after enabling it in trac.ini	CmTeknikTheme	blocker	jdog	08
#3838	Add MathML support to the wiki	Request-a-Hack	blocker	anybody	10
#4216	Postgres 8.3 - broken sql statements in all statistics sections	TracDownloaderPlugin	blocker	peca	11
#4504	TypeError: a float is required	ScrumBurndownPlugin	blocker	daan	01

**FIND TASKS
FASTER**

glibc 2.7 status

Release architectures

Architecture	Does build?	Regressions in the testsuite
alpha	✓ 2.7-3	✓
amd64	✓ 2.7-3	✓
arm	✓ 2.7-3	✓
hppa	✓ 2.7-3	✓
i386	✓ 2.7-3	✓
ia64	✓ 2.7-3	✓
mips	✓ 2.7-3	✓
mipsel	✓ 2.7-3	✓
powerpc	✓ 2.7-3	✓
s390	✓ 2.7-3	✓
sparc	✓ 2.7-3	✓

SEE PRIOR WORK
FASTER

Non-release architectures

Architecture	Does build?	Regressions in the testsuite
hurd-i386	✓ SVN	Testsuite crashes the machine (not a regression)
m68k	✗ Lowlevel primitives for ld so not implemented	



English

collapse all

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13

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12

11

10

9

8

7

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SELinux FAQ

ANSWER YOUR OWN QUESTIONS FASTER

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Scott Radvan

Red Hat Engineering Content Services

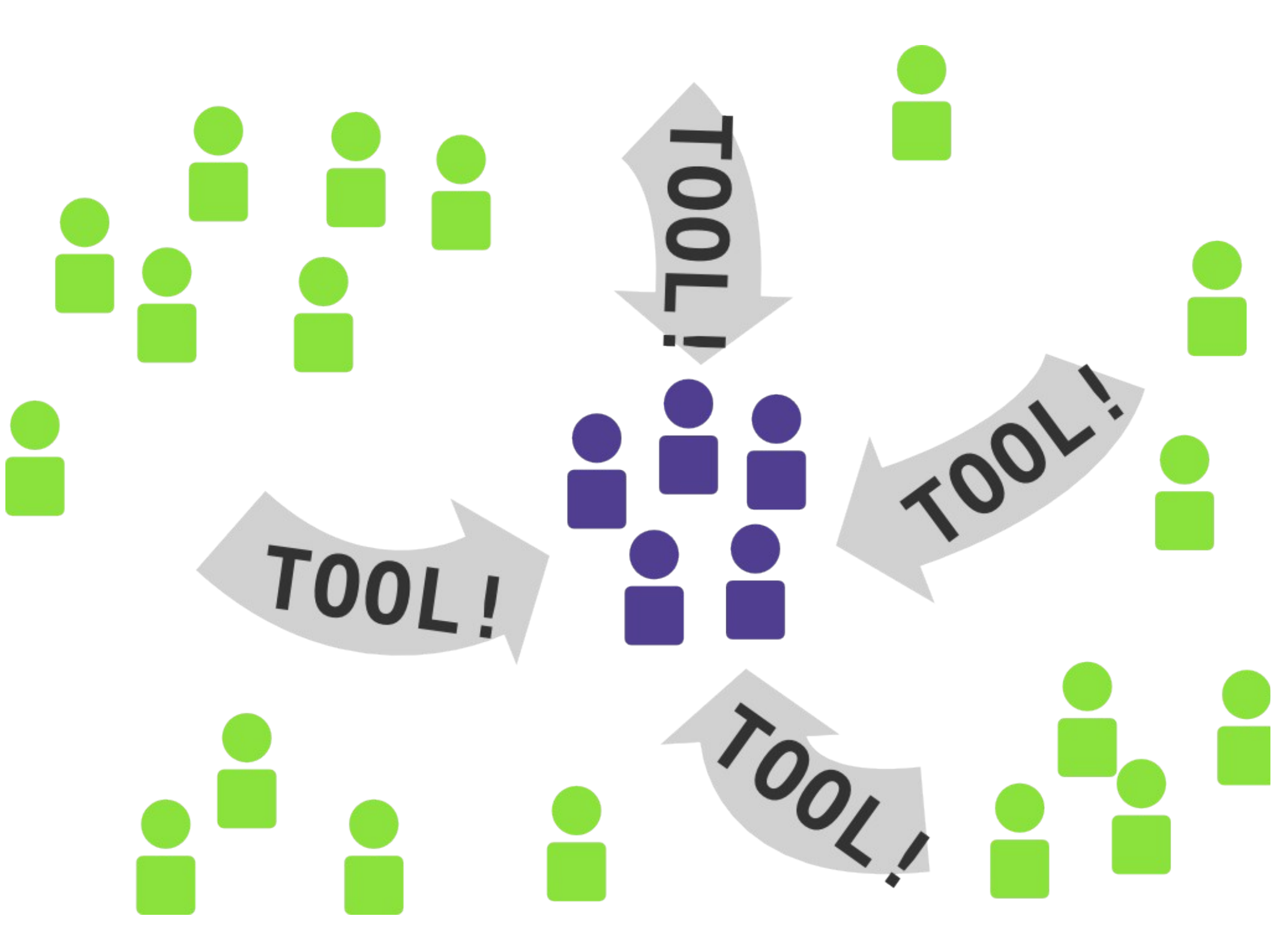
sradvan@redhat.com

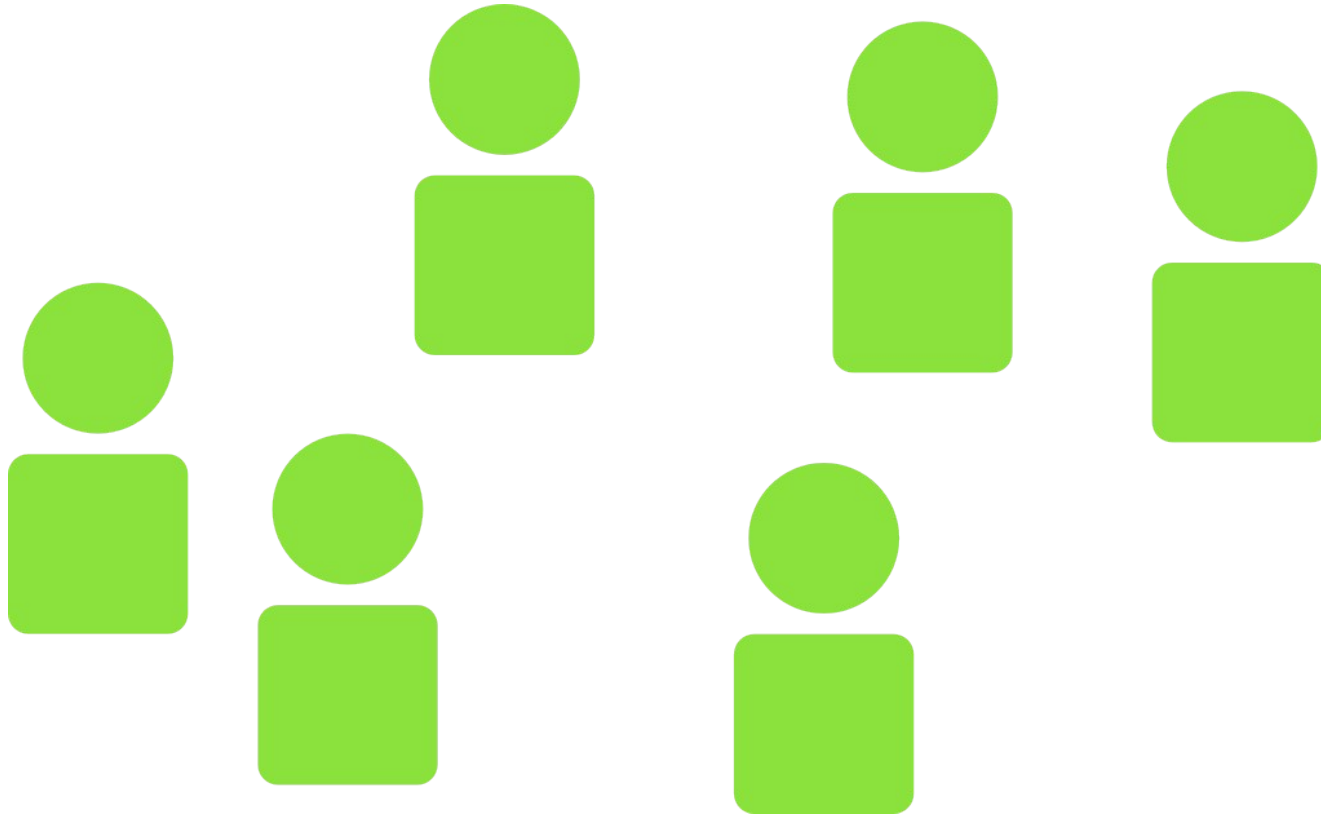
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7:41 < CodeBlock> mmcgrath: I test it (What's the problem status for?)
7:41 < mmcgrath> https://admin.stg.fedoraproject.org/accounts/
7:41 < mmcgrath> .headers https://admin.stg.fedoraproject.org/accounts/
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7:44 < ianweller> dgilmore: pong
7:45 < CodeBlock> mmcgrath: no :( AppTime is different every time
7:45 -!- ggruener [ggruener@p-194-126-28-10.web.cdn.redhat.com] has quit [Ping timeout: 40 seconds]
7:45 < mmcgrath> CodeBlock: ok, that's the real trick, this is probably being cached
7:45 < mmcgrath> *but
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7:48 < mmcgrath> good
7:48 < mmcgrath> yet another, pretty automated benefit
7:50 -!- aperez2t [~aperez@200.75.233.137] has quit [Quit: Leaving]
```

**WE WILL NOT TALK
WITH YOU UNTIL
YOU USE THIS
STRANGE NEW
TOOL**

	Wiki	Timeline	Browse Source	View Tickets	New Ticket	Search	Tags
--	----------------------	--------------------------	-------------------------------	-------------------------------------	----------------------------	------------------------	----------------------

{1} Active Tickets (2752 matches)

- List all active tickets by priority.
- Color each row based on priority.
- If a ticket has been accepted, a "*" is appended after the owner's name

**STOP ASKING ME
WHAT TO DO AND
GO AWAY**

Ticket	Summary	Component	Severity	Owner	Created
#429	charset error with mysql	AuthPlugin	blocker	anonymous	08/08/08
#579	does not support	RequestTracker	blocker	anybody	08/08/08
#647	RequestTracker import script	AbbrMacro	blocker	anonymous	08/08/08
#831	Case sensitive Authentication, and Case in sensitive Authorization.	AccountManagerPlugin	blocker	pacopablo	10/08/08
#1265	AttributeError: unicode object has no attribute 'decode'	tinyMce	blocker	anonymous	03/08/08
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#1573	Datamover does not find any Trac environments	DatamoverPlugin	blocker	codranger	05/08/08
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#1983	SQLITE ERROR	ticketMigration	blocker	roman	08/08/08
#2057	Genshi Template not provided with SummaryPlugin	SummaryPlugin	blocker	masariello	08/08/08
#2134	Choose users not in the list but with a simple form	PeerReviewPlugin	blocker	djeebus	10/08/08
#2307	how to uninstall completely	CalendarPlugin	blocker	ant_39	11/08/08
#2582	Error: ... failedformat -> requires a mapping	AddressPlugin	blocker	rottenchester@gmail.com	01/08/08
#2841	Users cannot be added to created peer review	PeerReviewPlugin	blocker	proofek	04/08/08
#3037	Cannot upgrade database	PlatformDeploymentPlugin	blocker	noone	08/08/08
#3064	[Patch] Plugin does not show up in trac admin	SearchAttachmentsPlugin	blocker	deltroo	08/08/08
#3088	Error in MySQL Query Syntax	StractisticsPlugin	blocker	mjrecena@gmv.com	08/08/08
#3133	AttributeError: ScannerError instance has no attribute 'message'	GanttChartPlugin	blocker	malsmith	08/08/08
#3233	[Patch] Infinite redirect loop after resetting the password	AccountManagerPlugin	blocker	pacopablo	08/08/08
#3393	Cannot add user when use LDAP authentication with apache	PeerReviewPlugin	blocker	anonymous	07/08/08
#3712	Nothing in reviewers list of create code review page	PeerReviewPlugin	blocker	proofek	05/08/08
#3740	This theme breaks app after enabling it in trac.ini	CmTeknikTheme	blocker	jdog	08/08/08
#3838	Add MathML support to the wiki	Request-a-Hack	blocker	anybody	10/08/08
#4216	Postgres 8.3 - broken sql statements in all statistics sections	TracDownloaderPlugin	blocker	peca	11/08/08
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glibc 2.7 status

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ia64	✓ 2.7-3	✓
mips	✓ 2.7-3	✓
mipsel	✓ 2.7-3	✓
powerpc	✓ 2.7-3	✓
s390	✓ 2.7-3	✓
sparc	✓ 2.7-3	✓

**AWAY TO A CORNER
NOBODY ELSE HAS
TOUCHED FOR
MONTHS**

Non-release architectures

Architecture	Does build?	Regressions in the testsuite
hurd-i386	✓ SVN	Testsuite crashes the machine (not a regression)
m68k	✗ Lowlevel primitives for ld so not implemented	



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SELinux FAQ

Frequently-asked questions about Security Enhanced Linux

SELinux FAQ

RTFM

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Paul W. Fields

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▷ 12

▷ 11

▷ 10

▷ 9

▷ 8

▷ 7

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▷ Fedora Draft Documentation

Map Statistics Tech

Why?

Because Piaget.

Piaget In One Slide

assimilation: adding another module

accommodation: REFACTOR EVERYTHING

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Releases

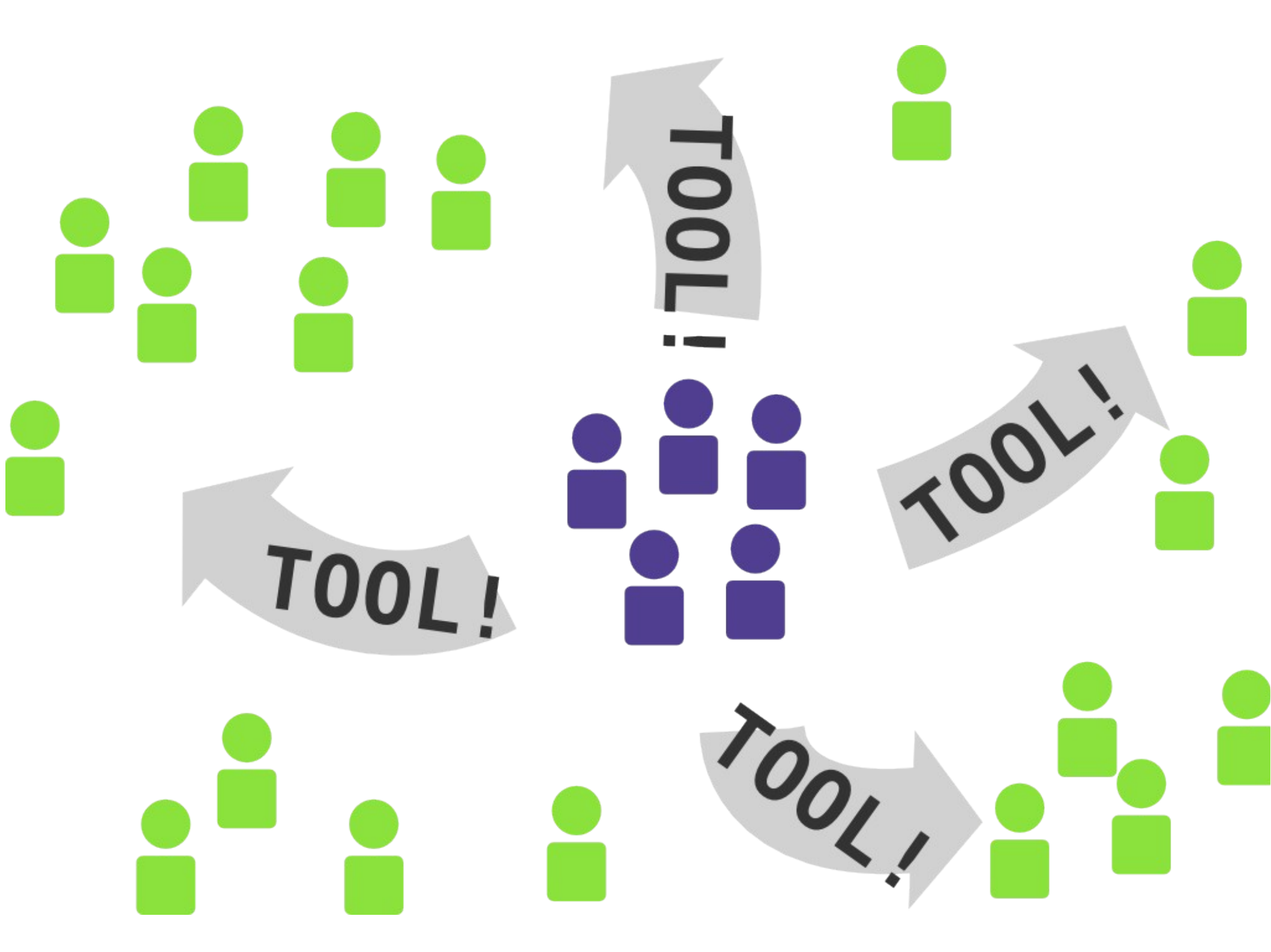
This is a list of the standard releases, both source and Windows installers. production version. The current production versions are **2.7.3** and **3.3.0**.

- [Python 3.3.0](#) (September 29, 2012)
- [Python 3.2.3](#) (April 10, 2012)
- [Python 3.1.5](#) (April 10, 2012)
- [Python 3.0.1](#) (February 13, 2009)
- [Python 2.7.3](#) (April 10, 2012)
- [Python 2.6.8](#) (April 10, 2012)
- [Python 2.5.6](#) (May 26, 2011)
- [Python 2.4.6](#) (December 19, 2008)
- [Python 2.3.7](#) (March 11, 2008)
- [Python 2.2.3](#) (May 30, 2003)
- [Python 2.1.3](#) (April 8, 2002)
- [Python 2.0.1](#) (June 2001)
- [Python 1.6.1](#) (September 2000)
- [Python 1.5.2](#) (April 1999)
- Older releases: [Source releases](#), [binaries-1.1](#), [binaries-1.2](#), [binaries-1.3](#)

assimilation

accommodation

assimilation



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SELinux FAQ

Frequently-asked questions about Security-Enhanced Linux

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trac

Active Tickets (102 tickets)

ID	Summary	Assignee	Priority	Status	Created	Updated
1086	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1076	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1077	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1078	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1079	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1080	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1081	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1082	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1083	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1084	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1085	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1086	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1087	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1088	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1089	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1090	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1091	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1092	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1093	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1094	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1095	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1096	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1097	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1098	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1099	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20
1100	libnss_ldap: wrong error message	Richard Hughes	Normal	Open	2009-08-20	2009-08-20





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clarity



constraint



freedom



frustration

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An Assessment Aside

**Formative: in-progress (code reviews, informal chats)
'tasting the food on the stove'**

**Summative: at the end (GRADE GRADE GRADE)
'tasting the food on the plate'**



clarity



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freedom



frustration

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MYTHS:



**not skilled enough
not technical enough
(perhaps later but surely not now)**

**In a cognitive apprenticeship within a
community of practice...**

zone of proximal development

legitimate peripheral participation



Zone of proximal development: learning to bike

1. watching

2. somebody pushes you

3. wheeeeeeeeeeeeeeeeeeeeeeeeeeeee

Zone of proximal development: learning python

1. watching

2. somebody pushes you

3. wheeeeeeeeeeeeeeeeeeeeeeeeeeeee

Zone of proximal development: learning python

1. watching

2. pair programming, code review, etc...

3. wheeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee

Legitimate Peripheral Participation Task Criteria

1. mission critical

3. nobody really cares

Legitimate Peripheral Participation Task Criteria

- 1. mission critical**
- 2. we have no time**
- 3. nobody really cares**

Example: test-driven development

```
def curriculum(student):
```

```
    """Students should be able to analyze the relationship between  
    a doctest, the function under test, and the test output.
```

```
>>> [curriculum(student) for student in class]
```

```
[True, True, True, True, True]"""
```

```
    fun_activity_thing()
```

```
    student.doctestability = True
```

```
    return student.doctestability
```

behaviorism

(the moment has come)

**a history of cognitive paradigms
in teaching and learning
(abridged)**

more information:

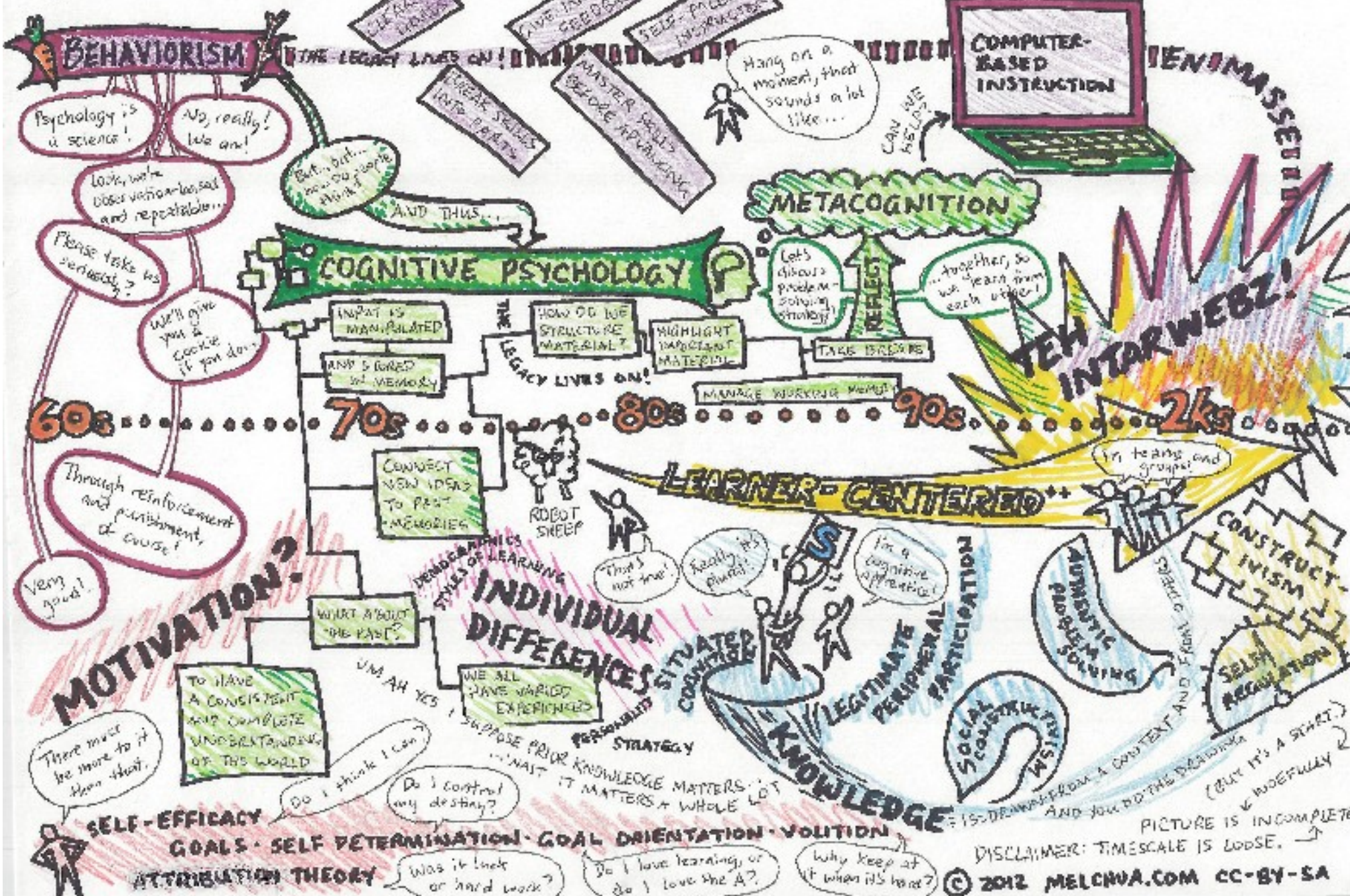
bit.ly/pycon-eduhistory

bit.ly/pycon-eduparadigms

COGNITIVE PARADIGMS IN TEACHING & LEARNING:

BASED ON SVINICKI'S (1999) "NEW DIRECTIONS IN LEARNING & MOTIVATION" PAPER - READ IT!

VERY, VERY BRIEF & INFORMAL
A HISTORICAL TOUR





BEHAVIORISM

Psychology is
a science!

No, really!
We are!

Look, we're
observation-based
and repeatable...

sumTwoNumbers

`sumTwoNumbers(first, second)`: Given two numbers, add them together and return the results.

`sumTwoNumbers(1, 2)` → 3

`sumTwoNumbers(2, 2)` → 4

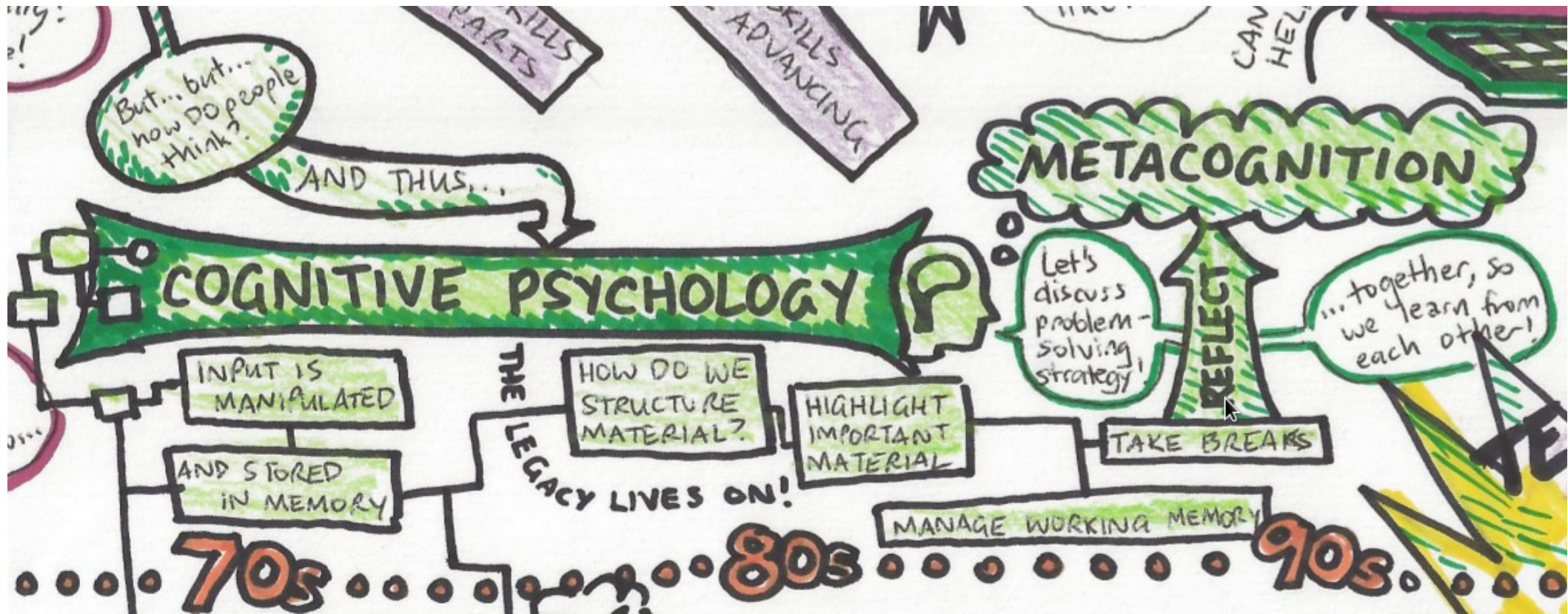
`sumTwoNumbers(10, -10)` → 0

Go

...Save, Compile, Run

```
def sumTwoNumbers(first, second):
```

Cognitive



You.

Situative





Cognitive apprenticeship.

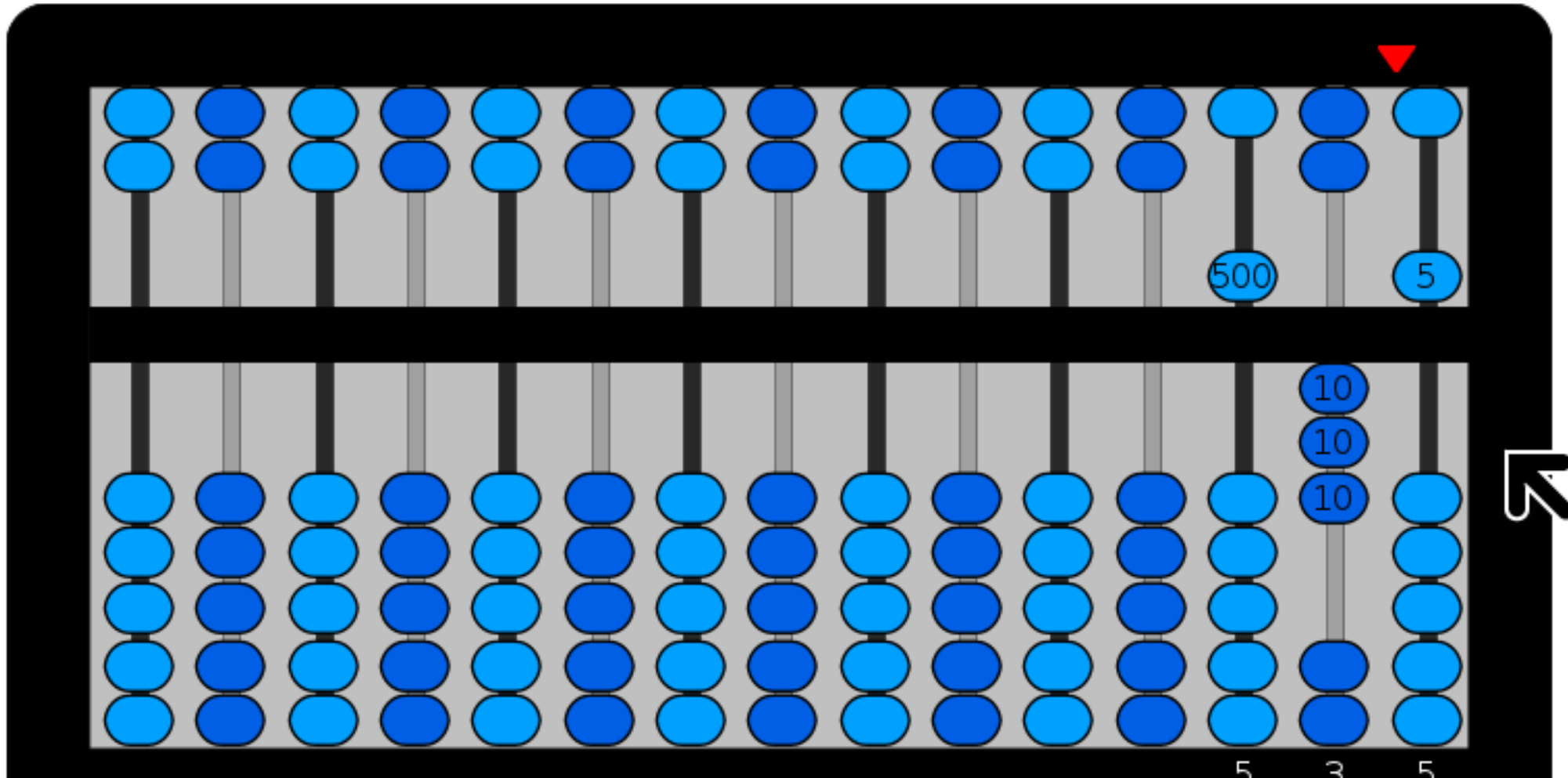
**model
coach
scaffold
fade**

bit.ly/pycon-cogapp

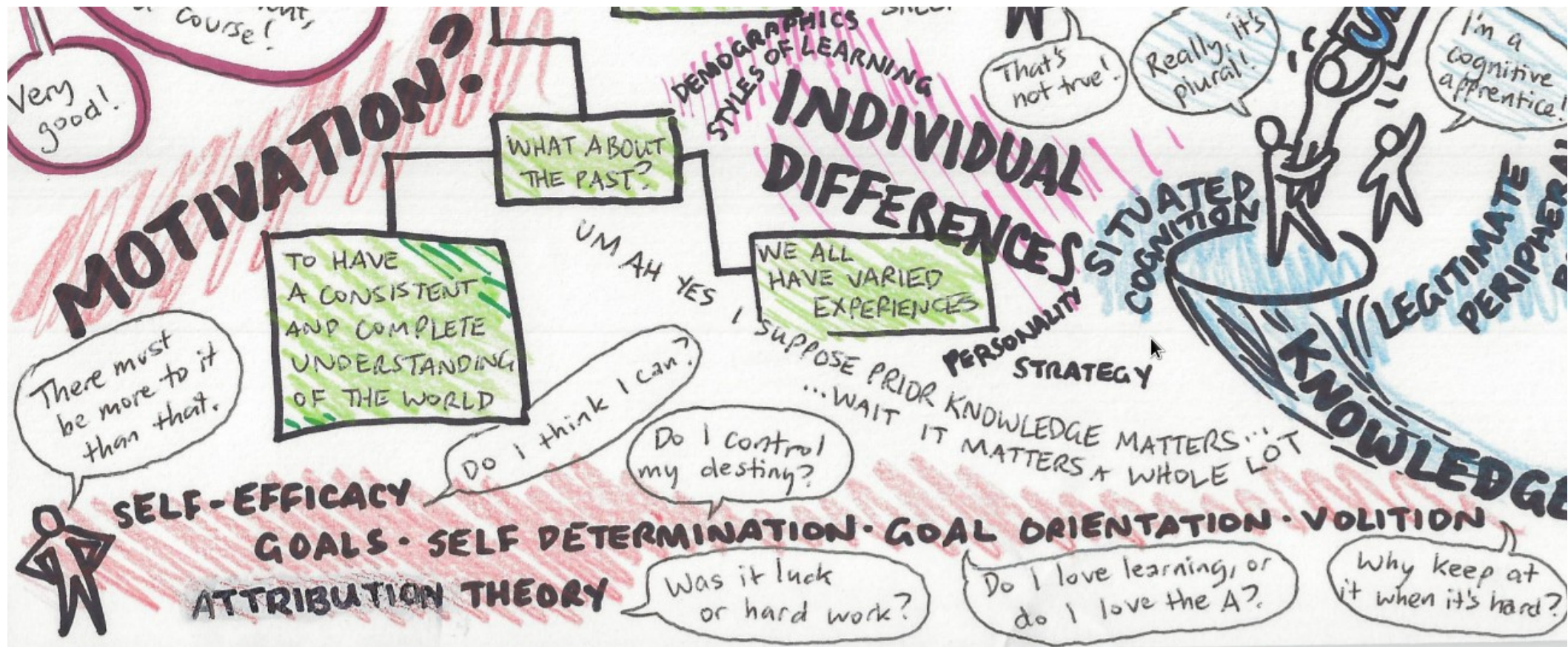
<http://wiki.sugarlabs.org/go/Activities/Abacus>



$$500 + 30 + 5 = 535$$



Motivation



Self-efficacy (Bandura)

1. doing it
2. seeing people (like me) do it
3. social persuasion
4. your own body

(Bandura also did social learning, which is a lot of fun – look it up!)

Attribution theory (Dweck)

Fixed vs Growth mindsets

aka

Nature vs Nurture

You.

Motivation (Deci, Ryan)

1. amotivation

autonomy

2. external regulation

relatedness

3. identified regulation

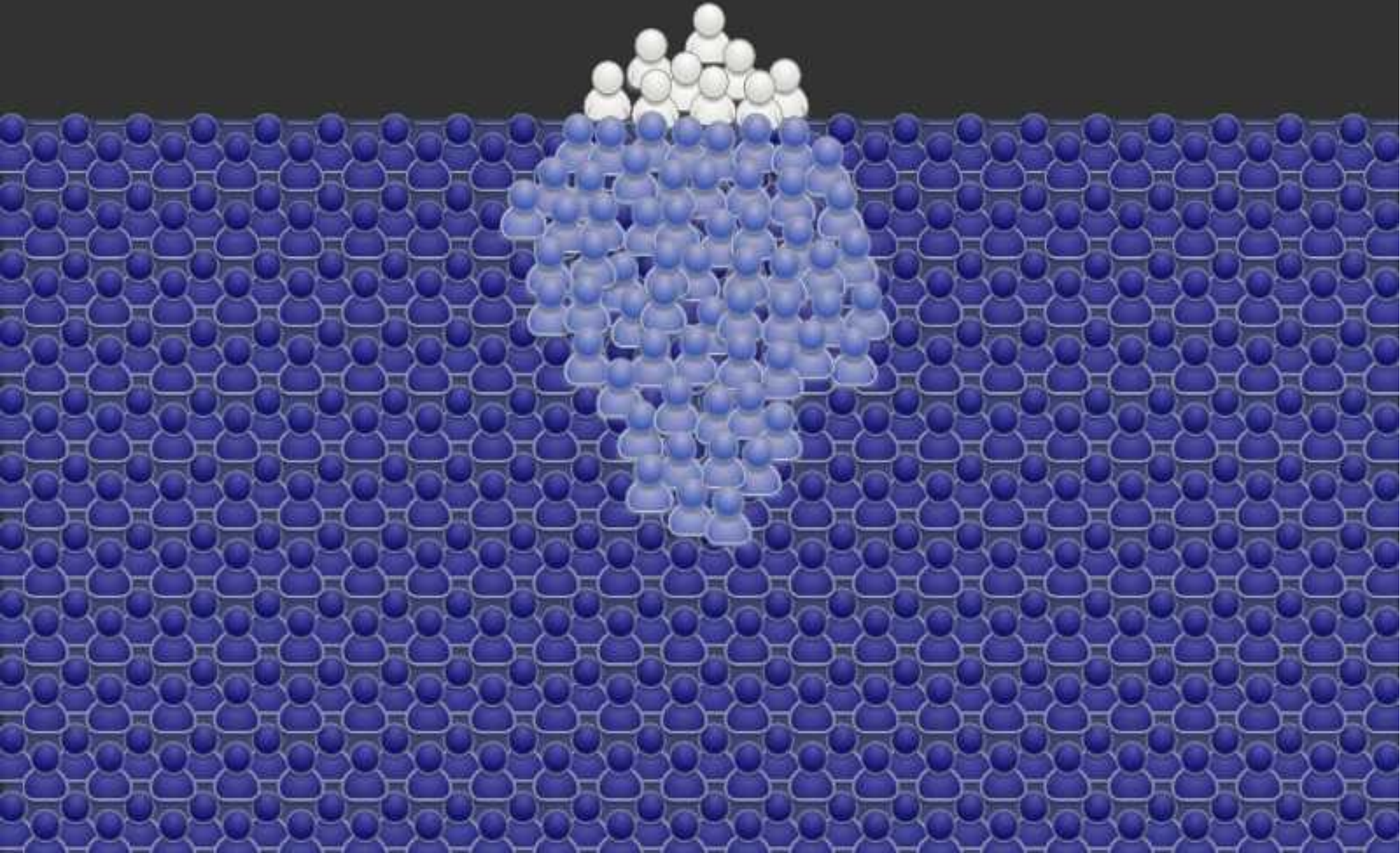
competence

4. intrinsic motivation

(thanks to Jon Stolk, Rob Martello, Mark Somerville, and the Olin College I2E2 crew)

**accidental learning in cognitive
apprenticeships within authentic
communities of practice with
metacognition models and
formative feedback to develop
self-efficacy and self-
determination**

Why? Because this.



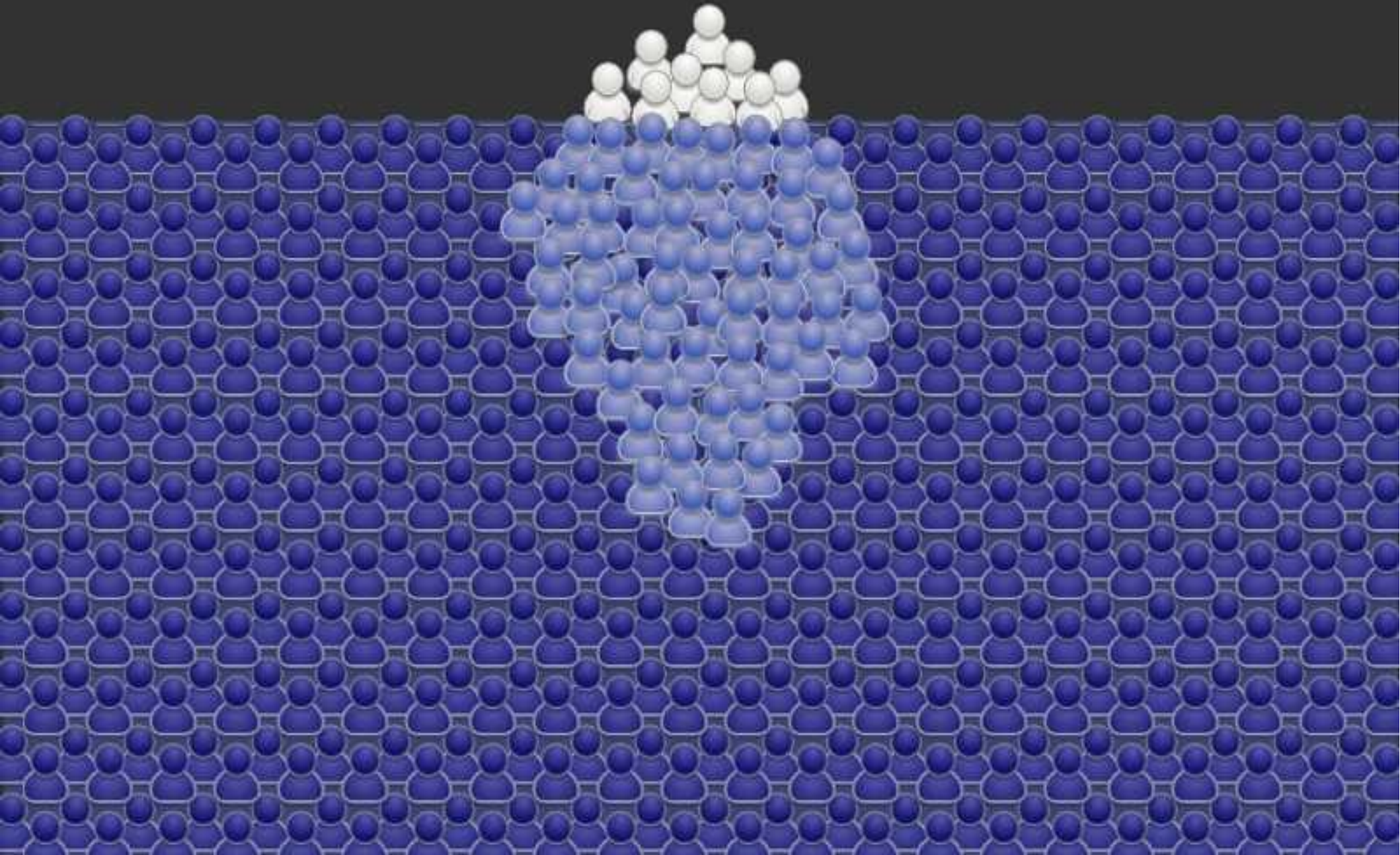
FAIL #1: Assumption of privilege

If it's hard, something's wrong with me

VS

**If it's hard, something's wrong with it
(I can fix that!)**

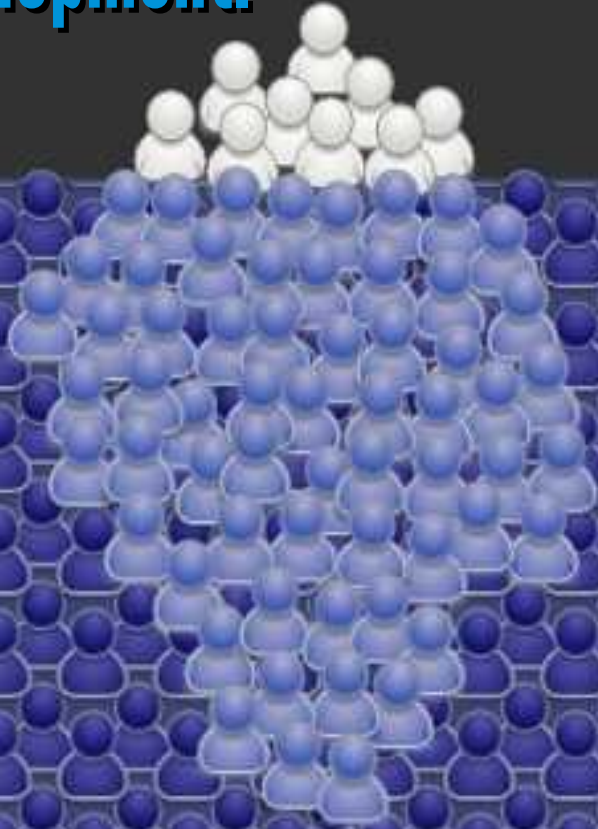
We teach the way we learn.



'...the first steps on this journey do not feel like progress. The voice diminishes in volume; it lacks... even the derived authority of those who... can assume as they parrot... they speak the truth... The inner voice turns critical; it tells them their ideas may be stupid. Women at this position think before they speak; and, because their ideas must measure up to certain objective standards, they speak in measured tones. Often, they do not speak at all. But this is not a passive silence; on the other side of this silence, reason is stirring.'

--Women's Ways of Knowing

'...confirmation and community are prerequisites rather than consequences of development.'



--Women's Ways of Knowing

that's all, folks. questions?

The background is a dark blue grid of circles. In the center, there is a large, dense cluster of blue spheres. Above this cluster, there is a smaller, more sparse cluster of white spheres. The text 'this talk' is written in blue over the white spheres, and 'my PhD' is written in orange over the blue spheres.

this talk

my PhD

bit.ly/pycon-edupsych

melchua.com/contact