

CWI

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Subatomic Scientific Knowledge Objects

ONS  
SC I

SL(E)BOK @ SLE'12 — remote contribution
Vadim Zaytsev, SWAT, CWI

 2012

Open science

- Apply principles of open source to science
 - distribute, inspect, modify, repurpose, ...
- Open Access
 - Green/Gold/Silver
- Open Research
 - Open access + open collaboration
- Transparency + reproducibility



Open notebook science



- Lab notebook: public, free, indexed by search engines
- Expose even raw experimental data
 - to reinterpret and reanalyse
 - to repurpose and reuse
- Variations
 - some content / all content
 - immediate access / delayed access

Open notebook in CS/SE



- Pros
 - nice to use
 - opens all kinds of extra analyses & research questions
 - achieves lots of objectives of open science
- Contras
 - tough to create
 - jeopardises the research itself

Scientific Knowledge Objects

- Public scientific knowledge objects (SKOs)
 - contribute
 - to the body of knowledge
 - to the reputation of the authors
- Atomic SKO = paper
- Subatomic SKOs = lab notebook entry = ?

subSKO Examples

The notational conventions I adopted, and why


At a given moment, the concept of polite mathematics emerged, the underlying idea of which is that, even if you have only 60 readers, it pays to spend an hour if by doing so you can save your average reader a minute. By inventing an idealized "average reader", we could translate most of the lofty, human goal of politeness into more or less formal criteria we could apply to our texts. This note is devoted to the resulting notational and stylistic conventions that were adopted as the years went by.

grammarware (Vadim Zaytsev) x

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Organizations



11 days ago
grammarware commented on commit [cwi-swat/rascal@9191c46729](#)
One is glad to be of service.

11 days ago
grammarware commented on pull request [cwi-swat/rascal#8](#)
Also, "Tthe" ;)

20 days ago
grammarware pushed to master at [SoTeSoLa/SoTeSoLa](#)
[f704b54](#) connecting our own wiki as a submodule

25 days ago
grammarware pushed to master at [cwi-swat/rascal](#)
[0c9e04a](#) Merge pull request #4 from Y3PP3R/master
[2165a79](#) Merge remote-tracking branch 'upstream/master'
[fc3cdcc](#) Removed no longer existing imports, working again
[View comparison for these 3 commits »](#)

25 days ago
grammarware merged pull request [cwi-swat/rascal#4](#)
Box language box2text fix
2 commits with 0 additions and 2 deletions


25 days ago
grammarware commented on commit [Y3PP3R/rascal@fc3cdcc936](#)
Ah, okay. I got confused by "no longer existing"...

25 days ago

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 **Vadim Zaytsev**
@grammarware

Metamodels can/must be used as a filter to specify the level of abstraction: what do we want to see in the system. (@jbezivin, #SoTeSoLa)

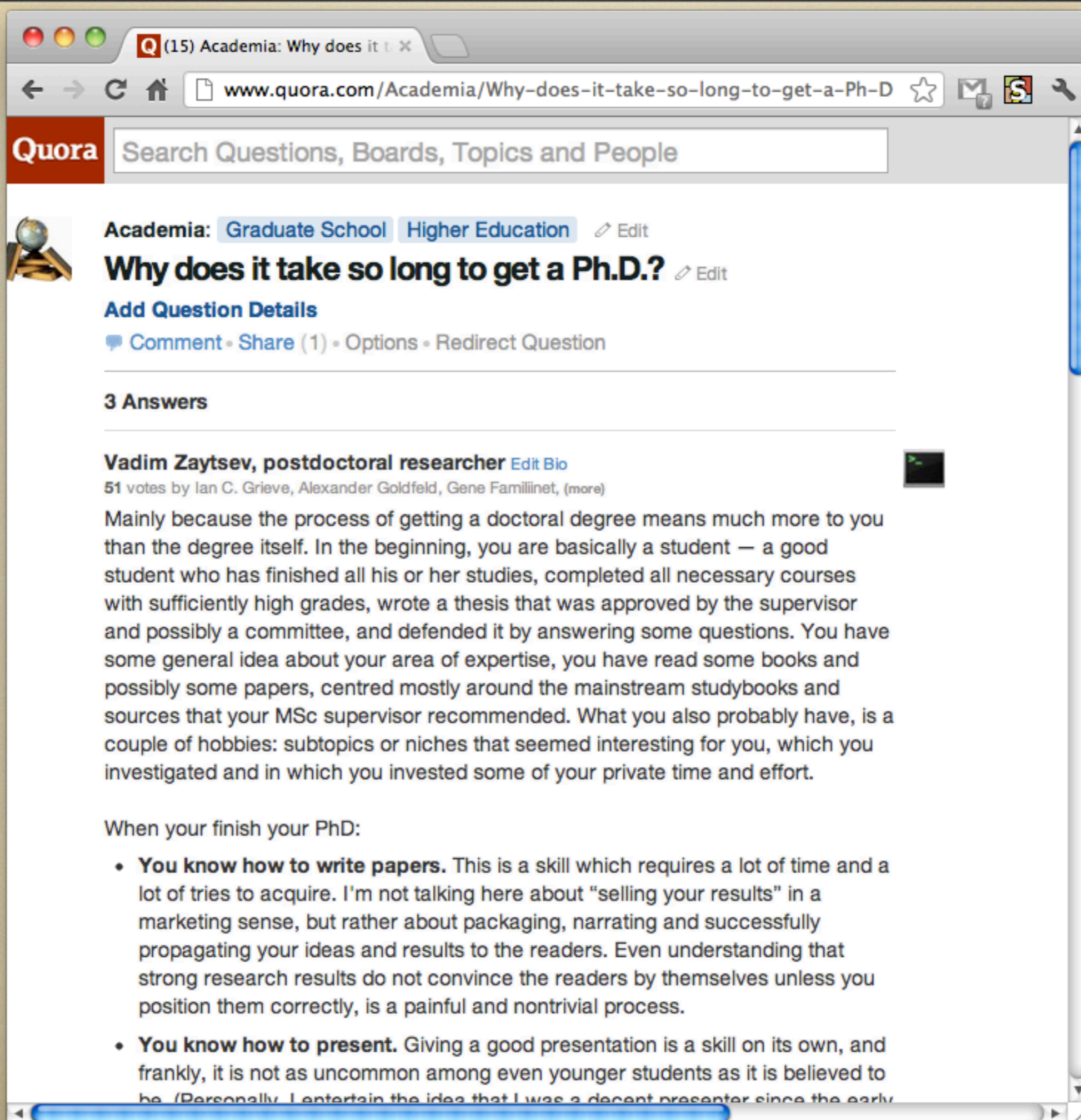
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2 RETWEETS  

10:27 AM - 23 Aug 12 · Embed this Tweet

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The screenshot shows a web browser window displaying a Quora question. The browser's address bar shows the URL: www.quora.com/Academia/Why-does-it-take-so-long-to-get-a-Ph-D. The Quora logo is visible in the top left corner of the page. The question is titled "Why does it take so long to get a Ph.D.?" and is categorized under "Academia: Graduate School" and "Higher Education". The question has 51 votes and is answered by Vadim Zaytsev, a postdoctoral researcher. The answer discusses the challenges of getting a PhD, including the need to write papers and present research.

Quora Search Questions, Boards, Topics and People

Academia: Graduate School Higher Education Edit

Why does it take so long to get a Ph.D.? Edit

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3 Answers

Vadim Zaytsev, postdoctoral researcher Edit Bio

51 votes by Ian C. Grieve, Alexander Goldfeld, Gene Familiinet, (more)

Mainly because the process of getting a doctoral degree means much more to you than the degree itself. In the beginning, you are basically a student — a good student who has finished all his or her studies, completed all necessary courses with sufficiently high grades, wrote a thesis that was approved by the supervisor and possibly a committee, and defended it by answering some questions. You have some general idea about your area of expertise, you have read some books and possibly some papers, centred mostly around the mainstream studybooks and sources that your MSc supervisor recommended. What you also probably have, is a couple of hobbies: subtopics or niches that seemed interesting for you, which you investigated and in which you invested some of your private time and effort.

When you finish your PhD:

- **You know how to write papers.** This is a skill which requires a lot of time and a lot of tries to acquire. I'm not talking here about "selling your results" in a marketing sense, but rather about packaging, narrating and successfully propagating your ideas and results to the readers. Even understanding that strong research results do not convince the readers by themselves unless you position them correctly, is a painful and nontrivial process.
- **You know how to present.** Giving a good presentation is a skill on its own, and frankly, it is not as uncommon among even younger students as it is believed to be. (Personally, I entertain the idea that I was a decent presenter since the early



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Ван Вейнгаарден, Адриан

Материал из Википедии — свободной энциклопедии [\[править\]](#)

Адриан (Аад) ван Вейнгаарден — нидерландский учёный в области прикладной математики и информатики, заложивший основы голландской информатики и вычислительной техники. По его мнению, путь учёного в этой области должен быть тройным и включать в себя [теорию вычислений](#), [компьютерные языки](#) и [аппаратное обеспечение](#)^[1] — и именно эти три области хорошо описывают исследовательские интересы самого ван Вейнгаардена.

Содержание [убрать]
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2 Аспиранты ван Вейнгаардена
3 Премия ван Вейнгаардена
4 Источники

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Ван Вейнгаарден был четвёртым сыном в браке Петера ван Вейнгаардена (1872—1924) и Лише де Брёйн (1885—1959). Был женат два раза: в 1940 на Барбаре Робберс (родила четырёх дочерей, погибла в 1958 году) и в 1960 году на Виллеке Дитц (умерла в 1977). Закончил [Делфтский технический университет](#) с дипломом инженера в [1939 году](#) и поступил в аспирантуру к Яну Бюргерсу по [гидродинамике](#). Во время [Второй мировой войны](#) университет закрылся, и с ним закончилась и аспирантура. Учёную степень (с отличием) получил в 1945 году в том же университете, на основе результатов в области вычислений корабельных винтов написав диссертацию по теме «Некоторые приложения [преобразований Фурье](#) к задачам [теории упругости](#)»^[2] и приступил к работе в [Национальной Аэрокосмической Лаборатории](#) (*англ.*). В следующем году был в числе отправленных в длительную командировку (с января по март) в Англию, связанную с обменом опытом, полученным во [Второй мировой войне](#), где ещё больше загорелся идеями автоматизации и создания вычислительных машин. Его подробные отчёты о встречах с английскими учёными, в том числе с [Дугласом Хартри](#) и об их изобретениях, в числе которых был [дифференциальный анализатор](#) (*англ.*), произвели глубоко положительное впечатление на Бизено, его руководителя^[3].

1 января 1947 года ван Вейнгаарден встал во главе вычислительного отдела [Математического центра](#), свеже созданного [научно-исследовательского института](#), который под его руководством превратился в одну из ведущих исследовательских организаций в разработке [теоретических моделей](#) для промышленных строительных проектов, а затем и в разработке, экспериментировании и внедрении [информационных технологий](#). В 1961 году он перешёл с поста главы вычислительного отдела (*нидерл. Rekenafdeling*) на пост директора всего НИИ, на котором и оставался вплоть до ухода на пенсию в 1981 году. При этом его личный вклад был не только административным:

Адриан ван Вейнгаарден Adriaan van Wijngaarden	
Дата рождения:	2 ноября 1916
Место рождения:	Роттердам
Дата смерти:	7 февраля 1987 (70 лет)
Место смерти:	Амстелвен
Страна:	 Нидерланды
Научная сфера:	вычислительная математика , информатика , языки программирования
Место работы:	Амстердамский университет , Центр математики и информатики
Учёная степень:	доктор философии
Учёное звание:	профессор
Альма-матер:	Делфтский технический университет
Научный руководитель:	Корнелис Бенъямин Бизено (<i>нидерл.</i>)
Известные ученики:	<ul style="list-style-type: none"> • Виллем ван дер Пул (<i>англ.</i>) • Эдсгер Дейкстра • Гюс Заутендаjk (<i>нидерл.</i>) • Яко де Бакер • Райндер ван де Рит • Маартен ван Эмден • Петер ван Эмде Бос • Херман те Риге (<i>англ.</i>) • Дик Груне (<i>англ.</i>)



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Статья **Обсуждение**

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Мегамоделирование

Мегамоделирование — разновидность **моделирования**, в котором по крайней мере некоторые элементы представляют собой другие модели, метамодели, языки, преобразования и пр. Аналогично «программированию-в-большом» (programming-in-the-large), мегамоделирование позволяет глобально подходить к описанию сложных программных систем и способствует пониманию устройства таких систем их создателями и владельцами, а также грамотной передаче информации об этом из рук в руки. То, что описывает мегамодель, иногда называется «языковой архитектурой», потому что оно пытается выразить взаимосвязь между **компьютерными языками** и преобразованиями между ними.


Простейшая мегамодель может выглядеть как-то так:



Здесь **грамматика в широком смысле** определяет **язык**, элементами которого являются программы. При этом существует другая грамматика, соответствующая в некотором смысле первой, задающая верность другой структуре, которая преобразуема в первую, что означает также наличие соответствия на уровне элементов языка. В дальнейшем при необходимости «преобразуемость» может быть более детально объяснена для того, чтобы явно выразить происходящее в системе. Например,

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Summary

Description	English: en:Open notebook science logo: all content, delayed publication. Idea by Shirley Wu (CC-BY-SA), font by Sergiy S. Tkachenko (CC-BY), vector version by Vadim Zaytsev .
Date	24 September 2012, 16:48:08
Source	Own work
Author	Spider

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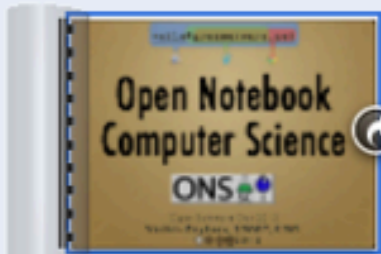
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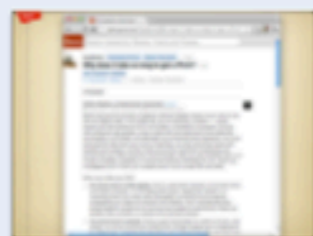
10



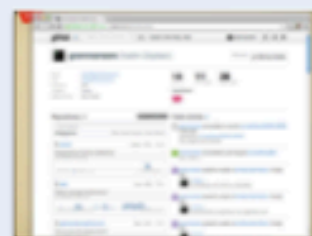
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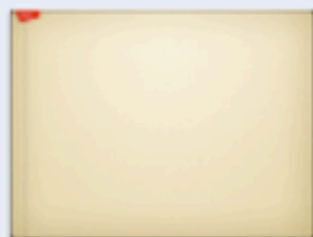
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16



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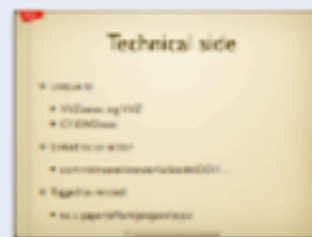
18



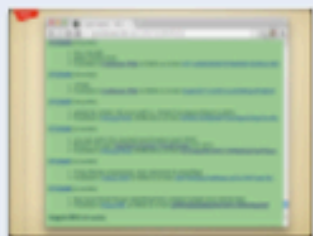
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20



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22



23



24



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26



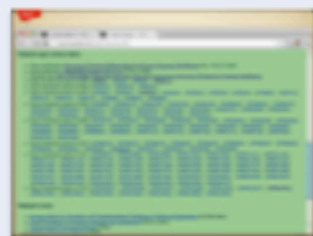
27



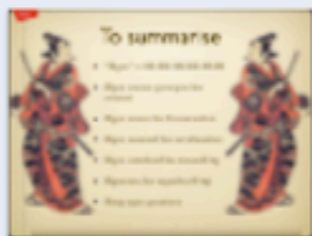
28



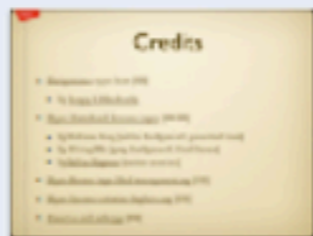
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30



31



32



33



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Suggestions

- SoTeSoLa day3 SATToSE p5 by Vadim Zaytsev 15:06
- SoTeSoLa day3 SATToSE p3 by Vadim Zaytsev

The screenshot shows a web browser window with the following elements:


- Browser Tab:** Spoonful of Hacking: Webdes x
- Address Bar:** spoonfulofhacking.blogspot.nl/2009/12/webdesign-and-supercompilation.html
- Navigation:** Back, Forward, Refresh, Home icons.
- Blog Header:**
 - Search bar with a magnifying glass icon.
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 - More dropdown menu.
 - Next Blog» link.
 - User profile: spider.vz@gmail.com
 - Navigation links: New Post, Design, Sign Out.
- Main Content Area:**
 - Header:** SPOONFUL OF HACKING
 - Date:** SUNDAY, 27 DECEMBER 2009
 - Post Title:** Webdesign and Supercompilation
 - Text:**

With supercompilation being a long-forgotten technique invented decades ago, and with "webdesign" term being usurped by graphic artists & HCI experts, I doubt this post will be anything close to popular, but as always, it will not stop me from expressing my opinion. But let's take it slowly now.

Let us assume the "web design" in a good, broad sense now: not just the omnipresent "logo on the right vs logo on the left" & "10 tips to get more clicks". Just as software design comprises multiple heterogeneous activities concerning the making of a piece of software, just as language design is about how to create a good language suited for the target domain, web design is in general about how to make a web site, a web service or a web app well.

Super-compilation is a program transformation method of aggressive optimisation: it refactors the code based on the most possible assumptions, throwing away all dead code, unused options and inactivated functionalities. If was irrelevant or at least unproductive during the structured programming epoch, but the results of super-compilation were promising before that and remain promising in our time, during the epoch of multi-purpose factory factory frameworks.

The current (at least since 1999) trend in web design is dynamics and more dynamics. The content and its presentation is separated, and most of the time what the end-user sees is what is being generated from the actual content stored somewhere in a database by using the representation rules expressed in anything from XSL to AJAX (in
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 - Name: SPIDER
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 - identity (1)
 - latex (1)
 - program transformation (1)
 - review (1)
 - web design (1)


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MediaWiki Grammar Recovery

Vadim Zaytsev

(Submitted on 23 Jul 2011)

The paper describes in detail the recovery effort of one of the official MediaWiki grammars. Over two hundred grammar transformation steps are reported and annotated, leading to delivery of a level 2 grammar, semi-automatically extracted from a community created semi-formal text using at least five different syntactic notations, several non-enforced naming conventions, multiple misspellings, obsolete parsing technology idiosyncrasies and other problems commonly encountered in grammars that were not engineered properly. Having a quality grammar will allow to test and validate it further, without alienating the community with a separately developed grammar.

Comments: 47 pages
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 Cite as: [arXiv:1107.4661](https://arxiv.org/abs/1107.4661) [cs.MM]
 (or [arXiv:1107.4661v1](https://arxiv.org/abs/1107.4661v1) [cs.MM] for this version)

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From: Vadim Zaytsev [\[view email\]](#)
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Language Evolution, Metasyntactically

Vadim Zaytsev

vadim@grammarware.net, <http://grammarware.net>
 SWAT, CWI, The Netherlands

Abstract: Currently existing syntactic definitions employ many different notations (usually dialects of EBNF) with slight deviations among them, which prevent efficient automated processing. When changes in such notation are required either due to maintenance activities such as correction or evolution, or because a grammar collection is written in a different notation than the one required by the grammarware toolkit, we speak of metalanguage evolution: i.e., a special language evolution scenario when the language itself does not necessarily evolve, but the notation in which it is written, does. Notational changes need to be propagated to different levels, such as to parsers that used to work with the old notation, to grammars of those notations that served as explanation material, and to the existing grammarbase.

The solution proposed in this paper, relies on composing a notation specification and expressing notation changes as transformation steps (transformation steps are coupled to changes in the grammars) and to changes in other grammars. This paper explains the general setup of such an infrastructure, with links to the prototypical implementation of the solution.

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BNF was here: what have we done about the unnecessary diversity of notation for syntactic definitions

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Published in:

· Proceeding


[SAC '12](#) Proceedings of the 27th Annual ACM Symposium on Applied Computing

Pages 1910-1915

ACM New York, NY, USA ©2012

[table of contents](#) ISBN: 978-1-4503-0857-1 doi > [10.1145/2245276.2232090](#)



 2012 Article








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My ONS

Automation: traces

- Git/subversion/... commits
- Tweets
- Quora answers
- Papers!
- Presentations
- Blog posts
- Wiki edits
- Exposed tools
- Documentation
- Shared raw data
- Auxiliary material
- ...

Open notebook entry

- Unique id
 - VVZxxxx, e.g. VVZI362
 - Cf. EWDxxx
- Linked to an action
 - commit/tweet/answer/wikiedit/DOI/...
- Tagged as related
 - to a paper/effort/project/topic

Dr. Vadim Zaytsev — Partial (x)

grammarware.net/opens/2012.html#VVZ1677

[VVZ1677] (15 Sep 2012)

- first draft for NWPT.
- Related to the paper *Metasyntactic Footprints and Signatures* (VZ, 2012).
- Committed to [Personal Work](#) at BitBucket as revision [d9b8722ca05939108702156876d54f05fde2316f](#).

[VVZ1678] (18 Sep 2012)

- MPM final version submitted.
- Related to the paper *Renarrating Linguistic Architecture: A Case Study* (VZ, 2012).
- Committed to [Personal Work](#) at BitBucket as revision [6668e14ecb967533f2acf36acf69a6dfe16447d7](#).

[VVZ1679] (20 Sep 2012)

- SSH stopped working: updating is now done with ftp instead of rsync.
- Committed to [Personal Work](#) at BitBucket as revision [f50b39c5676e039057dea36d40c37e54385ea997](#).

[VVZ1680] (20 Sep 2012)

- Gave a talk (rather, a lecture) at the Software Freedom Day.
- The first time my Partial Open Notebook is publicly exposed and demonstrated.
- Concerns the web page of [Software Freedom Day "Open Education"](#).
- Concerns the web page of [My Partial Open Notebook](#).
- Related to the presentation *Open Notebook Computer Science*.
- Related to [@reallynotabba](#)'s twitter status №[248382296636411906](#).
- Committed to [Personal Work](#) at BitBucket as revision [098664e22d5b699e2c493c096066c00ee5bb1232](#).

— [2005] | [2006] | [2007] | [2008] | [2009] | [2010] | [2011] | [2012] | [i] —

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W3C XHTML 1.0 ✓ W3C CSS ✓ CC BY SA

Conclusion

Open questions

- Partiality: often needed, but it is “honest”?
 - Prepare for publishing immediately
 - Release when safe
- Application of linked data methods
 - proper/useful querying/mining/...
- Constitutes prior publication
- Information flood

To summarise

- “Open” is PD, CC-BY, CC-BY-SA
- Open source principles for science!
- Open access for dissemination
- Open research for collaboration
- Open notebook for traceability
- Openness for reproducibility!
- ID with timestamp, action, tags
- Many open questions



Credits

- Designosaur open font (BY)
 - by Sergiy S.Tkachenko
- Open Notebook Science logos (BY-SA)
 - by Andrew Lang (white background, green/red text)
 - by Shirley Wu (gray background, black frame)
 - by Vadim Zaytsev (vector version)
- Open Access logo PLoS transparent.svg (PD)
- Open Source Initiative keyhole.svg (PD)
- Hevelius and wife.jpg (PD)

ONS  
SC I

Thank you!
...and good luck!

vadim@grammarware.net

