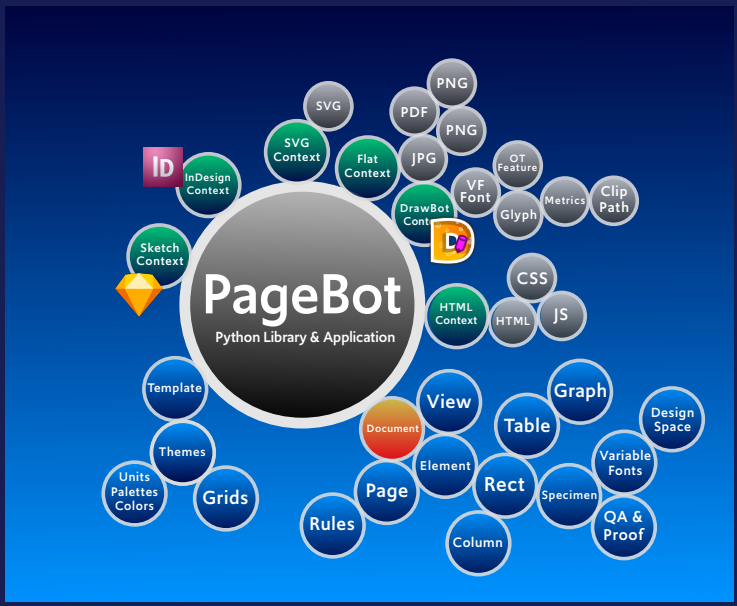
The weekly word

Phoebe Fnimble



The weekly word

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Publishing variables with PageBot

Scripting the many repeating details of a design project – like publishing this magazine – gives designers a chance to test the options without going through a lot of manual work.

What happens if designers learn to code?

A client calls for a thrilling project: The annual production of high-quality full-color travel guides in 40+ editions and 15+ languages for world-wide distribution. Saving on printing costs, only the black offset-plates change with each different language, so authors and translators get live feedback about the flow in such fixed layouts. And in addition, all pages are published online, getting their content from the same database.

Another client wants to create automated specimens for continuous testing during the design process of type, for *UFO, TTF, OTF and the new Variable Font technology. And these specimens will also be used for marketing purposes and as templates for actual usage of the typeface.*

Later in the year, the same client wants custom expansions to an existing typeface. Such a request includes not only the making of new drawings, but also new Open Type features, spacing and kerning. Not the kind of work type designers want to do entirely by hand. Yet, there is a big chance that standard type design applications do not fully support all the required functions for this project.

These are but a few examples where design and production cannot

tions by trial and error, step by step, sketching, prototyping, rejecting what doesn't fit, keeping what works and developing the rules along the way.

Once useful directions are discovered, they must be written out as rules for others to be useful. In plain English, an Art Director can explain some ideas for a series of images to a photographer, who then needs to interpret the ambigious description into a sequence of actions to make the photos.

In a stricter context, rules are used by web browsers, composing the layout of a page to fit the limited size of mobile screens. Then, simply interpreting the English language is not accurate enough—the rules must be translated into strict executable instructions.

In any case, the rules are likely to contain phrases such as *"For every photo you have, try to combine them in a frame. If that does not work, either scale some of them, hide them or move them to another page."*
Writing such rules in a structured language—such as Python or JavaScript—is called *Coding*. *Designers unfamiliar with writing code may think designing and coding are polar opposites, but in reality, designers write rules all the time. Designers create loops (doing something for as long as needed) and conditions (doing something under the right circumstances) constantly, just with a different language.*

How does that apply to type design?

Every design process breaks into parts that are mostly creative and parts that are mostly procedural. There is a difference between initial sketches—where the choices for contrast and serifs are made—and the production phase, where consistency in weight and width is important. By definition, design applications can only contain functions that are mainstream. The variety of functions is so widespread and the potential market so small, type licenses won't pay for it.

ing, the process will take too long. Sometimes a little chunk of code can speed up a very specific task, which exists for only a moment. For instance, while designing the *TYPETR Bitcount, a vast number of pixels had to be aligned to the grid, different for roman and italic. That problem never came up again.*

Scripts that automate such processes often span only a couple of lines, where they can save days or even weeks of work.

So designers should develop their own?

It is not realistic to expect that every designer will code their tools on the same level as professional programmers. Technology changes so fast that even professionals need to stay focused and select their specialization carefully. That is true for the *"big applications." But, there is an area where designers can surely benefit by writing their own code.*

In web design, where the ability for designers to read and write CSS is an enormous advantage compared to those who send their pixel images off for programmers to convert into code. Web designers who think along the lines of responsive pages and conditional content have better control over the process than their colleagues who stick to designing websites in InDesign. Designers may not be writing the best possible code in the world when they are working on prototypes, but working in the same medium allows programmers to take over later in the process and finish the job. The same thing happens with type design applications. In the past, websites were programmed and coded from scratch, costing thousands of dollars. With the availability of Open Source libraries such as *node.js, jquery and d3, it has become possible to create complex websites with only a few lines of code.*

The best of both worlds is to be standing on the shoulders of so many others, tapping into the scripting capabilities of existing applications.

Where many type design tools focus on the drawing process, not so much as been done for testing and the making of specimens.

In order to give better feedback to students when teaching them how to write their designs into code, *Just van Rossum developed DrawBot, now maintained by RoboFont developer Frederik Berlaen as Open Source application drawbot.com, implementing a Python graphics library for designers. DrawBot is perfect for visualizing the working of algorithms, to experiment with Python code and to automate relatively simple tasks that otherwise would take too much time in the sketching process. The vast amount of export formats, ranging from PDF, PNG, JPG to animated GIF and movie formats makes DrawBot an ideal tool for generative design and animations.*
As easy as *DrawBot is to start coding, the making of type specimens, magazines and websites needs more resident knowledge.*

…then adding PageBot

To bridge that gap, Open Source *PageBot offers an increasing amount of built-in knowledge, spanning several design disciplines. Since it can query font files to match proportions of letters with measures in typography, and since the dimensions of Variable Fonts are fully supported, all measures in a page interact and are covered by the same rules. PageBot not only offers scripting to make type specimens (ranging from the great designs of the past to new styles of today), it also is a solution to Single Source Publishing.*

For example, the pages of this article, as well as several others in this magazine, were automatically composed and generated by *PageBot, reading the article text from a MarkDown file, and then using Python instructions to compose the pages as PDF documents. However, other outputs, such as animations and websites, can be generated with the same content and the same scripts.*

PageBot will be under development for a while, with spin-offs in

UPGRADE VAR REGULAR

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Petr van Blokland
2018
TYPETR – typetr.typenetwork.com

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Upgrade Var Medium
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Upgrade Var Semi bold
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Upgrade Var Bold
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Upgrade Var Black
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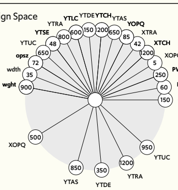
Design Space



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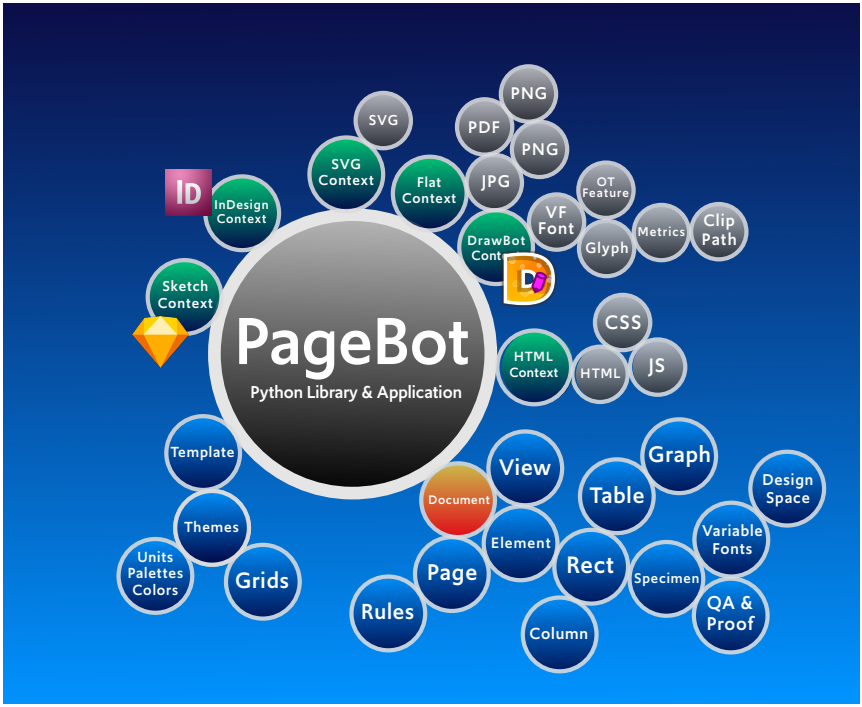
In the ongoing process of design, testing and presenting type, it is important to use the actual media that the typeface is intended for.

PageBot scripts not only generated the website, but all illustrations, diagrams and animations as well. The design part is figuring out how to write the code that matches the sketch.

PageBot is an MIT Open Source Python library for automated creations of publications. It can read and write many file formats, such as databases, images, animations and fonts. This allows for accurate parametric design, depending on platform and context, as type in print behaves very differently from type displayed on screen. The structure of typographic content for dynamic media—like websites—needs to be different from column layouts for fixed paper sizes.NoneNoneYet, it should not be the author or the designer to solve this problem over and over again. Eventually, their tools should contain all that knowledge.


PageBot
Python Library & Application
PNG
SVG
PDF
PNG
SVG Context
Flat Context
JPG
OT Feature
VF Font
Metrics
Clip Path
InDesign Context
DrawBot Cont
Glyph
Sketch Context
CSS
HTML Context
HTML
JS
Template
View
Graph
Design Space
Document
Table
Themes
Element
Variable Fonts
Units Palettes Colors
Grids
Page
Rect
Specimen
Rules
QA & Proof
Column

The common view of the process of design is to approach it as a linear operation. Research first, then a brief sketching phase, then production—all ending with a final presentation, barely making the deadline. This is the same, no matter if the whole process took 6 hours, 6 days, 6 weeks or a couple of months. In reality most of the work is done at the very end of a project, with little time left for enhanced views and experiments. Instead, doing a full circle of sketch-prototype-sketch, many design issues become clear earlier. If a designer cannot envision the entire process in a couple of hours, what could change later? Scripting tools like PageBot, help to generate prototypes and simulate the production process in an early stage, leaving space for the designer to iterate over new cycles.NoneNoneNoneSimilarly, when applied to web design, the use of rapid prototyping in a team is very effective to share knowledge and experience.

For many designers, learning to program and code is often not an obvious choice. Thinking in parameters is assumed to limit their ideas and it's seen as something that programmers ("developers") do after the design is finished. However, automating the creation of prototypes early in the process gives much feedback on how realistic the design implementation is and how it is perceived and interpreted by users. DesignDesign.Space offers studies on a Master's level, to let designers study their own process: Type, Tool and Teaching, in any combination, length or intensity. Recursion in action: A designer can design only if process and tools are considered too.

PageBot functions in many areas, from generating websites (top left), visualization of the design spaces for Variable Fonts (right), and specialized tools for Type Network, such as TextCenter, to design and control spacing and kerning for Variable Fonts (below).

Revived from a late 70's project to design the smallest possible

Similar to the famous Berthold type specimen (right) and the American Type Foundry specimen from 1926 (above), existing specifications and presentations can be described parametric and put back into service. And meanwhile supporting modern requirements, such as Variable Fonts and responsive layout.