

Specimens for a Procedural Typography

The Galactic faces set against their own framework sentences

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Abstract

This essay sets the faces of the `standardgalactic/fonts` repository to work. Every specimen is typeset live in the font it describes, using sentences taken from the titles of Flyxion’s other essays, and every specimen is paired with a statement about the font files that is either measured or marked as an observation, so that what is shown and what is claimed stay apart. The specimens display five things: one sentence in nine faces, the difference between stored text and displayed text, composition in the Cistercian numeral block, the behaviour of independent sweeps under two schedules of decay, and an order effect in which two operations at matched intensity leave the same summary statistics and different outlines.

1 Conventions

A font is easy to describe and hard to judge in prose, because the properties that matter, such as rhythm, texture, and the ease with which a sentence can be followed, appear only when text is set in it. The specimens below are therefore not images pasted into a document. They are lines of ordinary text set by the typesetter in the font files themselves, which means that every character shown is a character the font actually contains, and a specimen that required a missing character would have shown a gap, which the build log reports. Where a face lacks a character, the sentence has been chosen or adjusted to avoid it, and the text says so.

The sentences are the titles of other essays by Flyxion, among them the phrases “arrival is not acquisition,” “increments are not contributions,” and “retraction is an operation.” They were chosen because each names a distinction that the specimen next to it can display, and the pairing of a sentence with a face is an editorial choice made for that reason. It is not a claim that the essays themselves argue from these fonts. One further sentence, “intensity does not determine state,” belongs to the companion essay on the repository and states the idea that organizes the later sections: a font produced by a process is not fixed by the strength of that process alone.

Measurements come from the font files at the repository snapshot with the commit hash beginning `0d57718`, read with FontTools. Advance widths are in font units, and a figure is quoted with its unit-per-em value where the comparison needs it. The experiment fonts used here are the Cursive Galactic wave sweep, the Cursive Galactic full-decay sequence, and the shapeform order-effect pairs, and the build file expects the repository layout so that it can be compiled with XeLaTeX from the repository root.

2 One sentence in nine faces

SGA Regular (14,208 glyphs)

טדגרי טעלע:טדטז דנע יטכז ודויעטדע!

Cursive Galactic (1,134 glyphs)

לדגרי לרונלאלטז רדז ילדז ודויעטדע!

Systada (669 glyphs, 160-unit em)

טדגרי טעלע:טדטז דנע יטכז ודויעטדע!

Dactyl (669 glyphs, 160-unit em)

טדגרי טעלע:טדטז דנע יטכז ודויעטדע!

NovaMono Standard Galactic (6,024 glyphs)

Intensity does not determine state.

Logico_philosophicus (283 glyphs)

%.&≤÷&×%≤⊥ \!÷> &!≤ \÷≤÷\%&÷ >≤+≤÷.

Cheiro (66 glyphs)

intensity does not determine state.

Clypto (66 glyphs)

intensity does not determine state.

Arrival is not acquisition.

[illegible]

תוצאות: 14 יולי 1977

$\int_{-\infty}^{\infty} f(x) \delta(x-a) dx = f(a)$

The block also contains its own boundary markers. In SGA Regular and Cursive Galactic the three positions U+EB5A to U+EB5C, which the registry proposal leaves unassigned, are filled with labelled boxes that show the hexadecimal address, followed by the two quotation marks at U+EB5D and U+EB5E and the full stop at U+EB5F. NovaMono fills the same six positions with much smaller marks in place of the labelled boxes.

SGA Regular, private-use positions EB5A to EB5F



Cursive Galactic, the same six positions



NovaMono Standard Galactic, the same six positions



4 Composition in the Cistercian block

The Cistercian numeral block shows composition rather than substitution. Under the registry proposal the units digits occupy U+EBA0 to U+EBA9 and are ordinary spacing characters, while the tens, hundreds, and thousands digits occupy U+EBB1 to U+EBB9, U+EBC1 to U+EBC9, and U+EBD1 to U+EBD9, are marked as combining, and have no zero. In SGA Regular every units digit advances the cursor by 1,024 units, and every higher-place digit has an advance of zero, so that its outline overlays the character before it. A numeral is therefore stored as a short sequence and displayed as one sign.

2026 as three characters: units 6 (EBA6), tens 2 (EBB2), thousands 2 (EBD2); no hundreds digit because the hundreds place is zero



1234 as four characters: units 4 (EBA4), tens 3 (EBB3), hundreds 2 (EBC2), thousands 1 (EBD1)



The three faces draw the same assembled sign in three hands, which confirms that the overlay works across files and is a property of the convention and of the font metrics, not of one design. It also shows why placeholders must be read locally. The unused positions in this block, among them the zero positions of the combining ranges and U+EBAA to U+EBAF, are not missing numerals, because the proposal assigns nothing there.

5 The terminal comparison

Three faces are set below with the same short shell lines taken from the repository's own instructions, followed by a test string that exposes whether a face keeps its letters on a grid. A monospaced face sets every character on the same advance, so a row of narrow letters and a row of wide letters end in the same place.

NovaMono Standard Galactic (monospaced Latin)

```
$ python make_experiments.py
$ python make-experiment-index.py
$ python -m http.server

iiiiiiiiiiiiii
mmmmmmmmmmmmmmmmmmmm
wwwwwwwwwwwwwwwwwwww
```

Systada

[illegible]

Dactyl

\$ נו!י,יזטט!::ט!זלט'טאת נכדדו!י
\$ נו!י,זטז!-זטט!::ט!זלט-טאת נכדדו!י
\$ \$::ט!י,זדדד-נ נכדדו!י
!!!!!!!
ננננננננננננננננננ
.....

In NovaMono the three test rows have the same length, as the advance widths require, since all ninety-four printable ASCII characters in the file have one advance of 1,150 units in a 2,048-unit em. In Systada and Dactyl the rows differ in length, because the Latin letters carry their own widths. The terminal-friendly face in this collection is therefore NovaMono for Latin reading and, for Galactic reading, a face whose uniform cell covers its borrowed glyphs and not its letters. A reader who wanted Galactic text on a strict character grid would need the private-use letters or a modified face, and the repository does not yet say which of its files is meant for that.

6 Two sweeps from one source

The sequence fonts in the repository were produced by a function that takes the original font, applies the transformation at one parameter value, and saves the result, for each value in turn. Each state is therefore a function of its own parameter and of the source, and no state is built from another. The wave sweep for Cursive Galactic runs from amplitude 0 to amplitude 120 in eight steps at a fixed frequency of 2.0, so that the integer amplitudes are 0, 17, 34, 51, 68, 85, 102, and 120. The full-decay sequence stacks three operators, jitter, baseline droop, and stroke collapse, whose strengths all rise together, reaching at the last step a jitter of 40, a droop of 0.6, and a collapse of 0.5. The lines below set one sentence through each state.

wave sweep, state 000 (amplitude 0)

יזדו!ג!אדדז רדד לזא ידדלל!אז!

wave sweep, state 001 (amplitude 17)

יזדו!ג!אדדז רדד לזא ידדלל!אז!

wave sweep, state 002 (amplitude 34)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

wave sweep, state 003 (amplitude 51)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

wave sweep, state 004 (amplitude 68)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

wave sweep, state 005 (amplitude 85)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

wave sweep, state 006 (amplitude 102)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

wave sweep, state 007 (amplitude 120)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

full decay, state 000 (jitter 0, droop 0.00, collapse 0.00)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

full decay, state 001 (jitter 5, droop 0.09, collapse 0.07)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

full decay, state 002 (jitter 11, droop 0.17, collapse 0.14)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

full decay, state 003 (jitter 17, droop 0.26, collapse 0.21)

יִרְדּוּ-גִּבּוֹרֵי רֵדָה לֵאמֹת יִרְלֵל־אִיר/

state 002, wave then grid



state 002, grid then wave



state 004, wave then grid



state 004, grid then wave



The recorded measurements for the fourth state show how little the repository's own summary statistics can say about the difference. Both outputs have the same 682 points in the same 58 contours, and their total contour lengths are 88,329.059 units for wave then grid and 88,105.381 units for grid then wave, a gap of about a quarter of one percent, against a source length of 82,475.39. Their bounding boxes differ by only a few units at the top, at 828 against 844, and at the bottom, at -36 against -50 . The two fonts nonetheless differ point by point. Comparing corresponding points across the 682 in the two fourth-state fonts gives a mean displacement of 14.8 units, with a largest displacement of 44.0, while each differs from the source by a mean of about 60 units, with a largest displacement of about 107. At state 002 the mean displacement between the two orders is 6.8 units with a maximum of 21.0, and at state 000 the two are identical, with a displacement of 0.0, although each is about 0.9 units from the source on average. The order effect is therefore small beside the effect of the operations themselves and invisible to the recorded summary statistics, yet it is measurable in the outlines. This is the repository's own caution made concrete, that its geometric records do not settle perceptual questions, and it supplies a matched pair on which a reader experiment could test whether a difference of this size matters to recognition.

9 Faces with narrow inputs

Three faces ask for a specific kind of input and show their behaviour only when they receive it. Cheiro and Clypto contain letters and a few punctuation marks, and neither contains digits, the hyphen, or parentheses, so the sentence below has been set without its hyphen.

Cheiro, with the hyphen omitted because the face has none

Task sufficient preservation.

Clypto, with the hyphen omitted because the face has none

Task sufficient preservation.

Logico_philosophicus lacks only the underscore among the printable ASCII characters, so it accepts the full sentence together with digits and punctuation, and the result shows prose acquiring the look of formal notation while remaining ordinary text at the level of the stored characters.

Logico_philosophicus, with digits and punctuation

≤+>∫->≥*%/%÷&≤ ≈!÷>÷!+=≤%!. 0123456789 (+, -; ∴ \).

The Lingojam cipher face contains no Latin letters at all. Its thirty-three mapped characters are the controls and spaces, a few Latin-position characters, and symbols borrowed from other Unicode blocks, among them Canadian syllabics, mathematical operators, a katakana character, and a character from the mathematical monospace block. It is meant to receive a sequence already converted by the cipher tool, so a specimen of the face is best given as its inventory. Each glyph below is shown with its code point.

! / l i ∫ ' . ∫ ∫
0021 002F 007C 00A1 0296 0307 0323 1451 14B2

⌌ ∫ ∫ ∫ ∫ ∫ ∫ ∫ ∫ ∫
14B7 14ED 14F5 1511 2138 21B8 2234 2237 22A3

∫ ± ∫ ∫ ∫ ∫ ∫ ∫ ∫ ∫
22EE 234A 2351 2393 254E 268D 2A05 30EA A58C

⌌ ∫
A58E 1D679

Shown this way the face is a set of twenty-nine carriers whose conventional identities, a mathematical sign or a syllabic character, are unrelated to the letters they stand for in the cipher. Software that does not know the convention treats them as what they are, which is why a screenshot of this face establishes neither the original text nor the stored characters.

10 What the specimens add

The specimens turn several statements that were made abstractly in the companion essay into things that can be looked at. The difference between a glyph count and a character count appears as the difference between a Latin string and a private-use string drawn in one face. The claim that a numeral can be stored as several characters and displayed as one appears as a composite sign in three hands. The distinction between an independent sweep and a cumulative sequence appears as a block of states that look like progress and contain no history, and the effect of a schedule appears as two paragraphs with the same

endpoints and different journeys. The order effect appears as a pair of fonts whose recorded summaries nearly coincide and whose outlines do not.

They also mark what remains untested. None of the specimens measures how well anyone reads any of them. The sweeps and schedules are arranged for a reader, but no reader has been timed, and the order-effect pair is ready for a recognition test that has not been run. The terminal-friendly claim has been narrowed by measurement to the borrowed glyphs of Systada, with NovaMono the only face here that keeps Latin letters on a grid. The set of faces has been shown to share a registry convention for Standard Galactic letters across three files, and not across all ten.

To reproduce the specimens, place `specimens.tex` in the root of the repository, with the font files and the experiment directories named in the preamble in their usual places, and compile it twice with XeLaTeX. The preamble loads Amiri from the repository for the running text, so no font outside the repository is needed.