East Asian typography on the modern web

网络时代的汉字排版

By Chen Hui Jing / @hj_chen

Surname

First name

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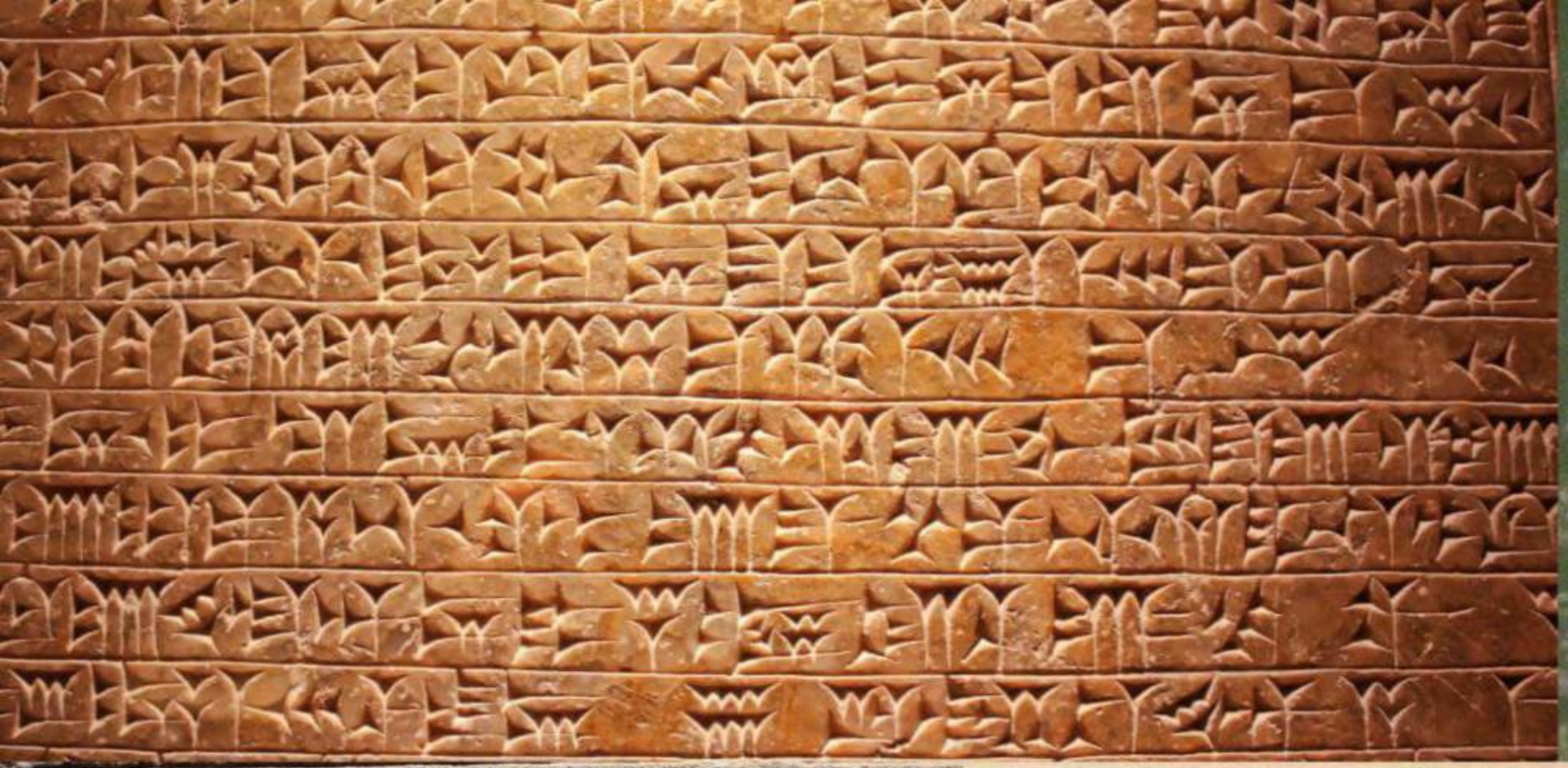

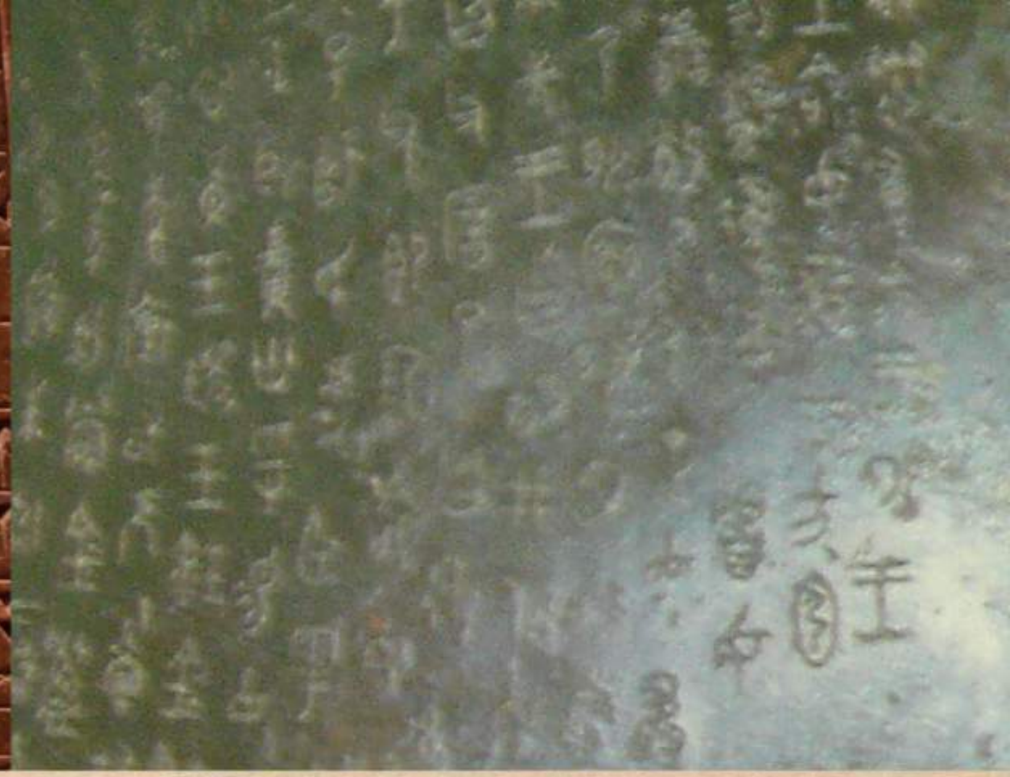

也擧賢畢會
崇山峻領茂林
滿暎帶左右
列坐其次雖無
絲竹管弦一觴一詠亦
是日也天朗氣
觀宇宙之大俯
所以遊目騁懷足
娛信可樂也夫

https://huijing.github.io/slides/81-typetechmunich-2020

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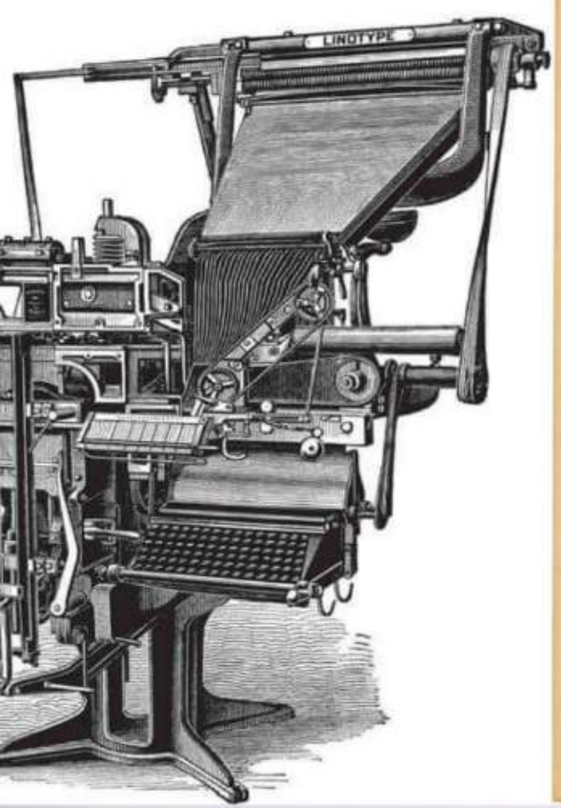
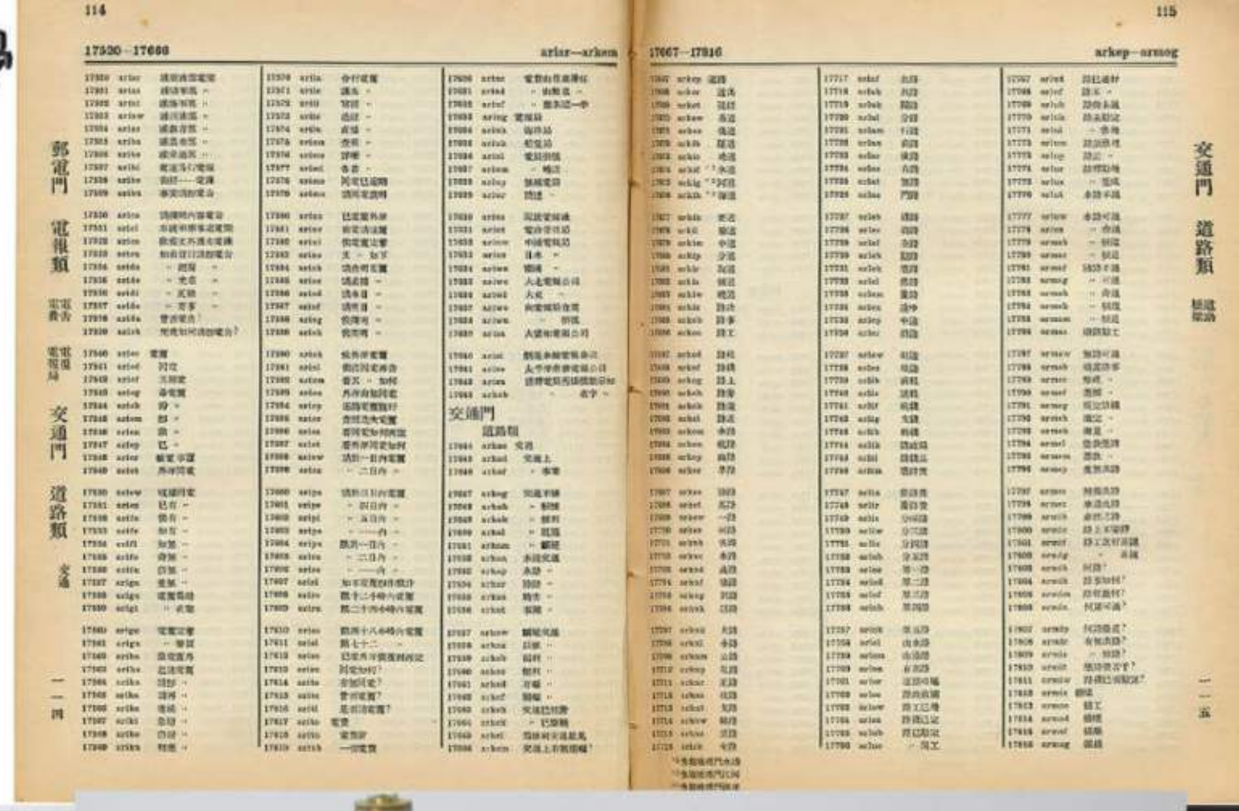



114

17530—17660 arlar—arkem

郵電門 電報類 電告費 電報電話 交通門 道路類 交通

一一四

17530 arlar 通知由電報	17570 arlia 分付電報	17600 arlor 電報由信箱傳
17531 arlas 通知報馬 ～	17571 arlie 議決 ～	17601 arlot ～ 由郵送 ～
17532 arlci 通知報馬 ～	17572 arlil 領回 ～	17602 arlof ～ 盤和記一步
17533 arlcw 通知通信 ～	17573 arlid 追回 ～	17603 arlng 電報員
17534 arlcr 通數存信 ～	17574 arlds 查復 ～	17604 arlnk 海外局
17535 arlha 通信查信 ～	17575 arlem 查明 ～	17605 arlnb 船電局
17536 arlhe 通來通知 ～	17576 arlem 詳明 ～	17606 arlni 電報到信
17537 arlhi 電報為不電報	17577 arlmi 查者 ～	17607 arlnm ～ 略法
17538 arlhw 電話 ～ 電報	17578 arlma 用電信通知	17608 arlng 無線電局
17539 arlkn 事實清楚電告	17579 arlma 請用電報明	17609 arlor 問道 ～
17540 arlca 清楚明白發電告	17580 arlas 已經電外部	17610 arlos 電報電線通
17541 arlcl 本國和那事通電報	17581 arlcr 前定清法電	17611 arlot 電信管理局
17542 arlcm 發電文不清楚電講	17582 arlcl 例電電法電	17612 arlow 中國電報局
17543 arlcw 如在發行清楚電告	17583 arlce 文 ～ 如下	17613 arlsa 注水 ～
17544 arlda ～ 遲報 ～	17584 arlch 清查明電報	17614 arlsw 電線 ～
17545 arlde ～ 光電 ～	17585 arlce 清楚清 ～	17615 arlve 大北電報公司
17546 arldi ～ 民信 ～	17586 arlcd 清查目 ～	17616 arlwk 大東 ～
17547 arlde ～ 電報 ～	17587 arlcf 清明目 ～	17617 arlwe 海電國際電報
17548 arlda 發出電告!	17588 arlcg 發明明 ～	17618 arlwn ～ 聯國
17549 arlch 電報知明清楚電告?	17589 arlch 發明明 ～	17619 arlsn 大東和電報公司
17550 arlcr 電報	17590 arlch 發明清電報	17620 arlsl 創造和發電報公司
17551 arlcf 封信	17591 arlcl 發信回電報告	17621 arlsw 太平洋和東電報公司
17552 arlcf 王國電	17592 arlcm 發表 ～ 如何	17622 arlsm 德律電話和馬德國電報公司
17553 arlcg 海電報	17593 arlce 再清自知明電	17623 arlsch ～ 表字 ～
17554 arlch 沙 ～	17594 arlcp 電報電報發行	交通門
17555 arlcm 郵 ～	17595 arlce 查明清先知電報	道路類
17556 arlcn 郵 ～	17596 arlcm 電報電話明清電	17624 arlsm 交通
17557 arlcp 巴 ～	17597 arlct 電報清電報如何	17625 arlsal 交通上
17558 arlcr 郵電事業	17598 arlcw 清明一和電報電	17626 arlsaf ～ 事業
17559 arlch 馬郵電電	17599 arlca ～ 二自內 ～	
17560 arlcw 電報郵電	17600 arlga 清明目目內電報	17627 arlsag 交通事業
17561 arlcy 信有 ～	17601 arlge ～ 四自內 ～	17628 arlsab ～ 郵政
17562 arlfa 信有 ～	17602 arlgl ～ 五自內 ～	17629 arlsab ～ 郵所
17563 arlfc 加信 ～	17603 arlga ～ 一內 ～	17630 arlsal ～ 郵局
17564 arlfl 加信 ～	17604 arlga 郵內一自內 ～	17631 arlsam ～ 郵政
17565 arlfn 郵加 ～	17605 arlga ～ 三自內 ～	17632 arlsan 水道交通
17566 arlfs 自加 ～	17606 arlga ～ 一內 ～	17633 arlsap 水路 ～
17567 arlgn 電報 ～	17607 arlgl 如不定期的郵電信	17634 arlsar 陸路 ～
17568 arlgs 電報電報	17608 arlgs 散十二小時內電報	17635 arlsas 地方 ～
17569 arlgl ～ 電報	17609 arlgs 間二十四小時內電報	17636 arlsat 郵政 ～
17570 arlgs 電報定者	17610 arlgs 散四十八小時內電報	17637 arlsaw 關稅交通
17571 arlgs ～ 郵寄	17611 arlgl 第七十二 ～	17638 arlsa 以前 ～
17572 arlha 急電電告	17612 arlgm 以電報事實電報的定	17639 arlsab 郵政 ～
17573 arlha 急信電報	17613 arlgs 到電如何?	17640 arlsac 郵所 ～
17574 arlha 信郵 ～	17614 arlhe 分如何電?	17641 arlsad 郵電 ～
17575 arlhb 電報 ～	17615 arlhc 發明電報?	17642 arlsaf 郵電 ～
17576 arlhc 電報 ～	17616 arlhl 是否清電報?	17643 arlsb 交通設施費
17577 arlhi 急信 ～	17617 arlhc 電報	17644 arlsbl ～ 已發報
17578 arlhe 告信 ～	17618 arlhh 電報部	17645 arlsc 為使郵政通起見
17579 arlhh 特電 ～	17619 arlhh 一切電報	17646 arlsem 交通上有關係嗎?

115

17647—17916 arkep—armog

交通門 道路類 橋梁 隧路

一一五

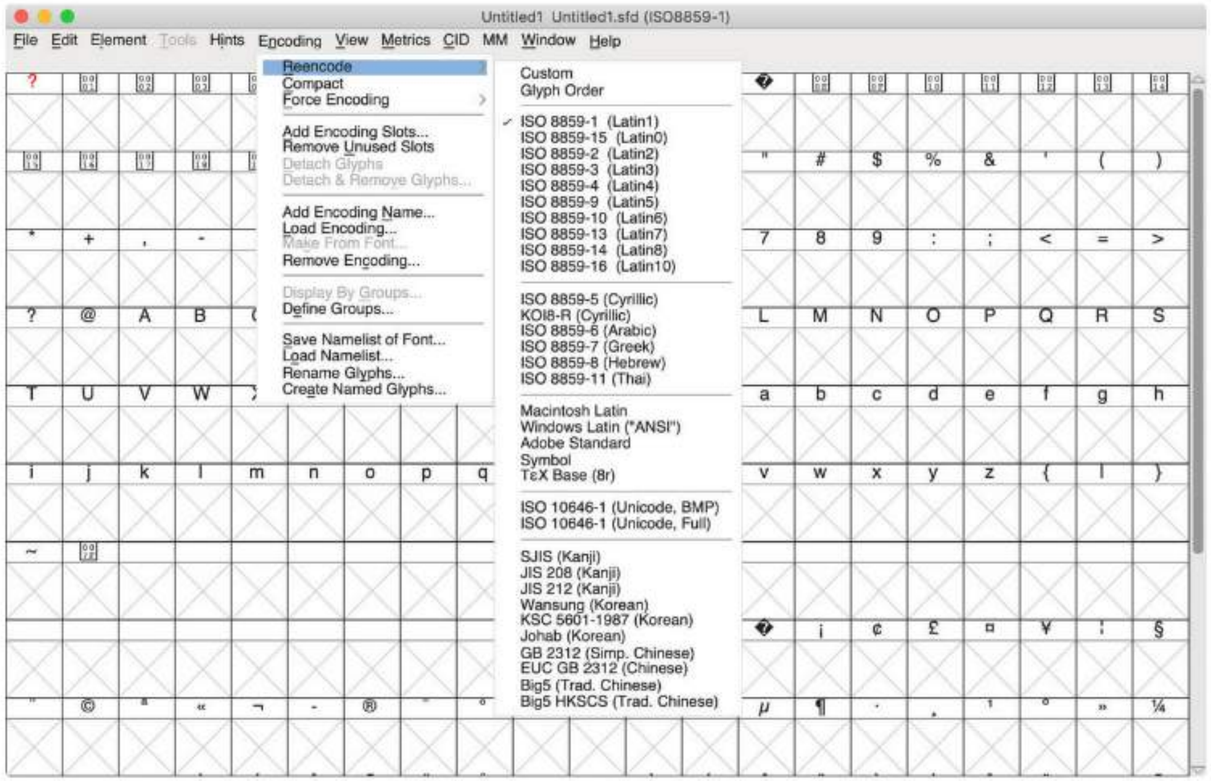
17647 arkep 道路	17717 arlaf 山路	17787 arlwt 路紅磚牌
17648 arkw 道路	17718 arlab 山路	17788 arlwf 路不 ～
17649 arkst 道路	17719 arlab 路路	17789 arlwb 路與未通
17650 arkaw 馬道	17720 arlal 分路	17790 arlcb 路高起定
17651 arkas 橋道	17721 arlam 行路	17791 arlcl ～ 修理
17652 arkfb 船道	17722 arlan 山路	17792 arlcm 路路修理
17653 arkic 地道	17723 arlar 橋路	17793 arlcp 路記 ～
17654 arkif [1] 水道	17724 arlas 山路	17794 arlcr 路修開始
17655 arkig [2] 河道	17725 arlat 旅路	17795 arlcs ～ 電線
17656 arkih [3] 海道	17726 arlaw 門路	17796 arlch 水路未通
17657 arkib 密道	17727 arlab 橋路	17797 arlcw 水路可通
17658 arkil 船道	17728 arlac 橋路	17798 arlcn ～ 市通
17659 arkim 中道	17729 arlad 分路	17799 armah ～ 橋道
17660 arkip 分道	17730 arlae 路路	17800 armac ～ 橋道
17661 arkir 石道	17731 arlcb 電路	17801 armaf 橋路不通
17662 arkis 橋道	17732 arlcl 橋路	17802 armag ～ 可通
17663 arkiw 地道	17733 arlcn 電路	17803 armah ～ 南通
17664 arkis 路道	17734 arlcs 路中	17804 armah ～ 橋道
17665 arkis 路事	17735 arlcw 路中	17805 armac ～ 橋道
17666 arkow 路工	17736 arlcr 橋路	17806 armas 橋路路工
17667 arkof 路程	17737 arlcw 橋路	17807 armcw 橋路可通
17668 arkof 路橋	17738 arlcs 橋路	17808 armah 橋道路事
17669 arkog 路上	17739 arlch 橋程	17809 armcr 整理 ～
17670 arkoh 路學	17740 arlde 橋程	17810 armcf 整理 ～
17671 arkoi 路道	17741 arlbf 橋建	17811 armcg 橋定路橋
17672 arkoi 路式	17742 arlbg 橋建	17812 armch 橋定 ～
17673 arkon 水路	17743 arlbh 橋建	17813 armch 橋道 ～
17674 arkos 橋路	17744 arlbh 路橋路	17814 armcl 橋修理路
17675 arkoy 橋路	17745 arlbl 路橋工	17815 armcm 橋修 ～
17676 arkw 平路	17746 arlbm 橋路修	17816 armcp 橋修路路
17677 arkw 平路	17747 arlca 橋路修	17817 armcr 橋修路路
17678 arkwa 路	17748 arlcr 橋路修	17818 armcs 橋修路路
17679 arkwb 路路	17749 arlcs 分橋路	17819 armcw 橋修路路
17680 arkwc 路路	17750 arlcw 分橋路	17820 armcy 橋修路路
17681 arkwd 路路	17751 arlcy 分橋路	17821 armdf 路橋路路
17682 arkwe 路路	17752 arlcz 橋路	17822 armdg 橋路路路
17683 arkwf 路路	17753 arlch 分橋路	17823 armdh 橋路路路
17684 arkwg 路路	17754 arlce 第一路	17824 armdi 橋路路路
17685 arkwh 路路	17755 arlcf 第二路	17825 armdj 橋路路路
17686 arkwi 路路	17756 arlcg 第三路	17826 armdk 橋路路路
17687 arkwk 路路	17757 arlch 第四路	17827 armdl 橋路路路
17688 arkwl 路路	17758 arlcl 第五路	17828 armdm 橋路路路
17689 arkwm 路路	17759 arlcm 第六路	17829 armdn 橋路路路
17690 arkwn 路路	17760 arlcn 第七路	17830 armdp 橋路路路
17691 arkwo 路路	17761 arlcp 第八路	17831 armdr 橋路路路
17692 arkwp 路路	17762 arlcr 第九路	17832 armdt 橋路路路
17693 arkwr 路路	17763 arlcs 第十路	17833 armdw 橋路路路
17694 arkwt 路路	17764 arlcw 第十一路	17834 armdy 橋路路路
17695 arkwu 路路	17765 arlcy 第十二路	17835 armdz 橋路路路
17696 arkwv 路路	17766 arlcz 第十三路	17836 armeb 橋路路路
17697 arkwx 路路	17767 arlcb 第十四路	17837 armfb 橋路路路
17698 arkwy 路路	17768 arlcc 第十五路	17838 armfc 橋路路路
17699 arkwz 路路	17769 arlcd 第十六路	17839 armfd 橋路路路
17700 arkwb 路路	17770 arlce 第十七路	17840 armfe 橋路路路
17701 arkwc 路路	17771 arlcf 第十八路	17841 armfg 橋路路路
17702 arkwd 路路	17772 arlcg 第十九路	17842 armfh 橋路路路
17703 arkwe 路路	17773 arlch 第二十路	17843 armfi 橋路路路
17704 arkwf 路路	17774 arlcl 第二十一路	17844 armfj 橋路路路
17705 arkwg 路路	17775 arlcm 第二十二路	17845 armfk 橋路路路
17706 arkwh 路路	17776 arlcn 第二十三路	17846 armfl 橋路路路
17707 arkwi 路路	17777 arlcw 水路可通	17847 armfm 橋路路路
17708 arkwj 路路	17778 arlcn ～ 市通	17848 armfn 橋路路路
17709 arkwk 路路	17779 armah ～ 橋道	17849 armfp 橋路路路
17710 arkwl 路路	17780 armac ～ 橋道	17850 armfr 橋路路路
17711 arkwr 工路	17781 armaf 橋路不通	17851 armfs 橋路路路
17712 arkwa 路路	17782 armag ～ 可通	17852 armfw 橋路路路
17713 arkwt 路路	17783 armah ～ 南通	17853 armfy 橋路路路
17714 arkwv 橋路	17784 armah ～ 橋道	17854 armfz 橋路路路
17715 arkwx 路路	17785 armac ～ 橋道	17855 armgb 橋路路路
17716 arkwz 平路	17786 armas 橋路路工	17856 armgc 橋路路路

[1] 各船後代門水道
[2] 各船後代門河道
[3] 各船後代門海道

Overview

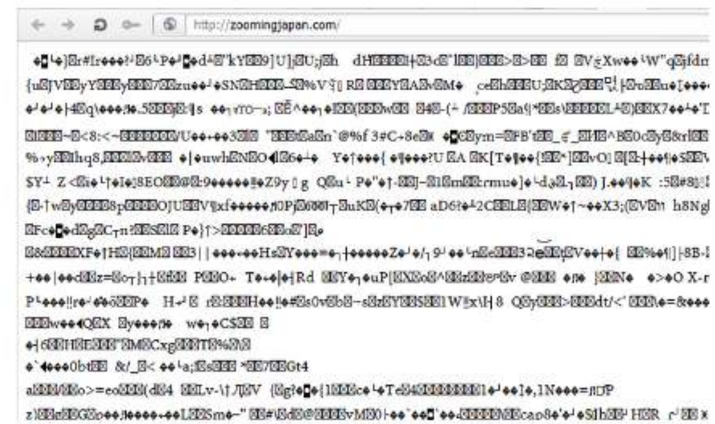
一、Recognising the characters
二、Displaying the characters
三、Laying out the characters

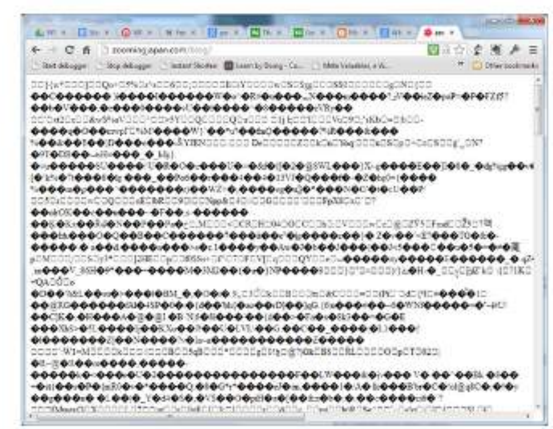
Character encoding



Encoding options available in FontForge

Encoding incompatibility





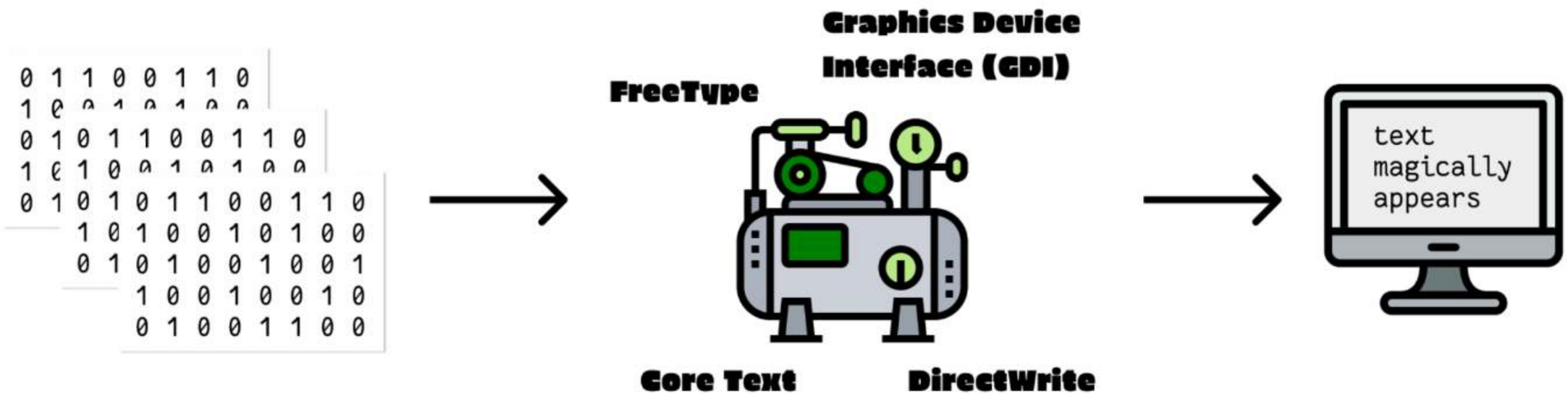
ေကာင္းလိုက္တာ.စားခ်င္စရာသက္၊APSစားတတ္လာလို့ဝမ္းသာပါတယ္.

Declaring character encodings for the web

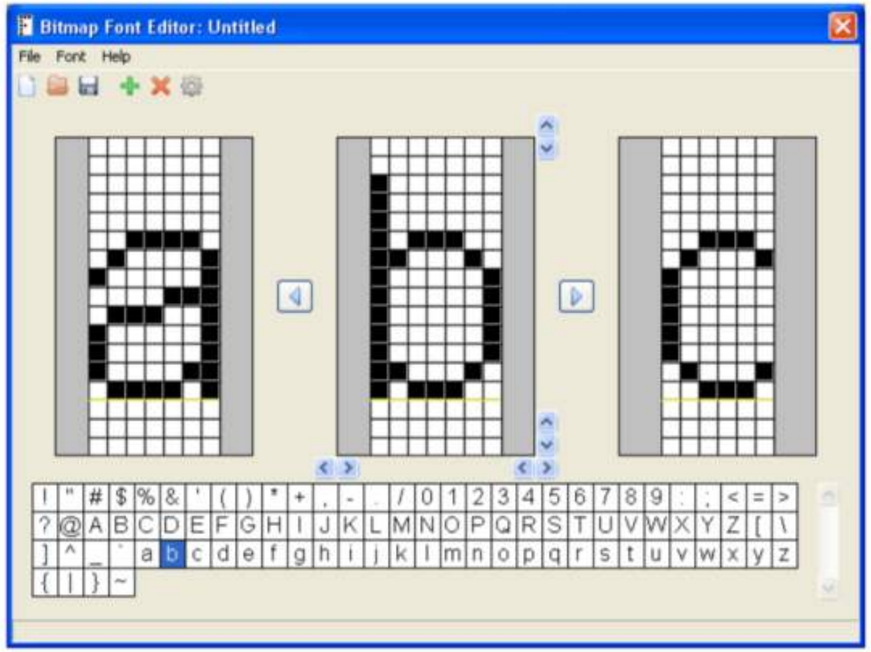
```html
<!doctype html>
<html lang="en">
<head>
<meta charset="utf-8"/>
...
```

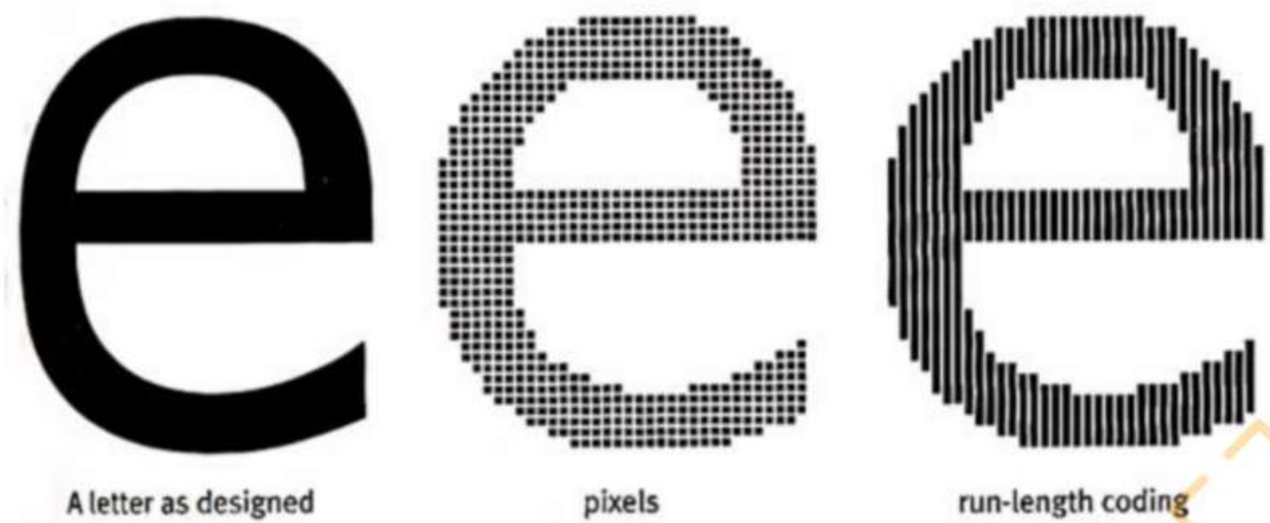
```css
@charset "utf-8";
/* all the styles for your web page */
```

Text rendering on electronic screens

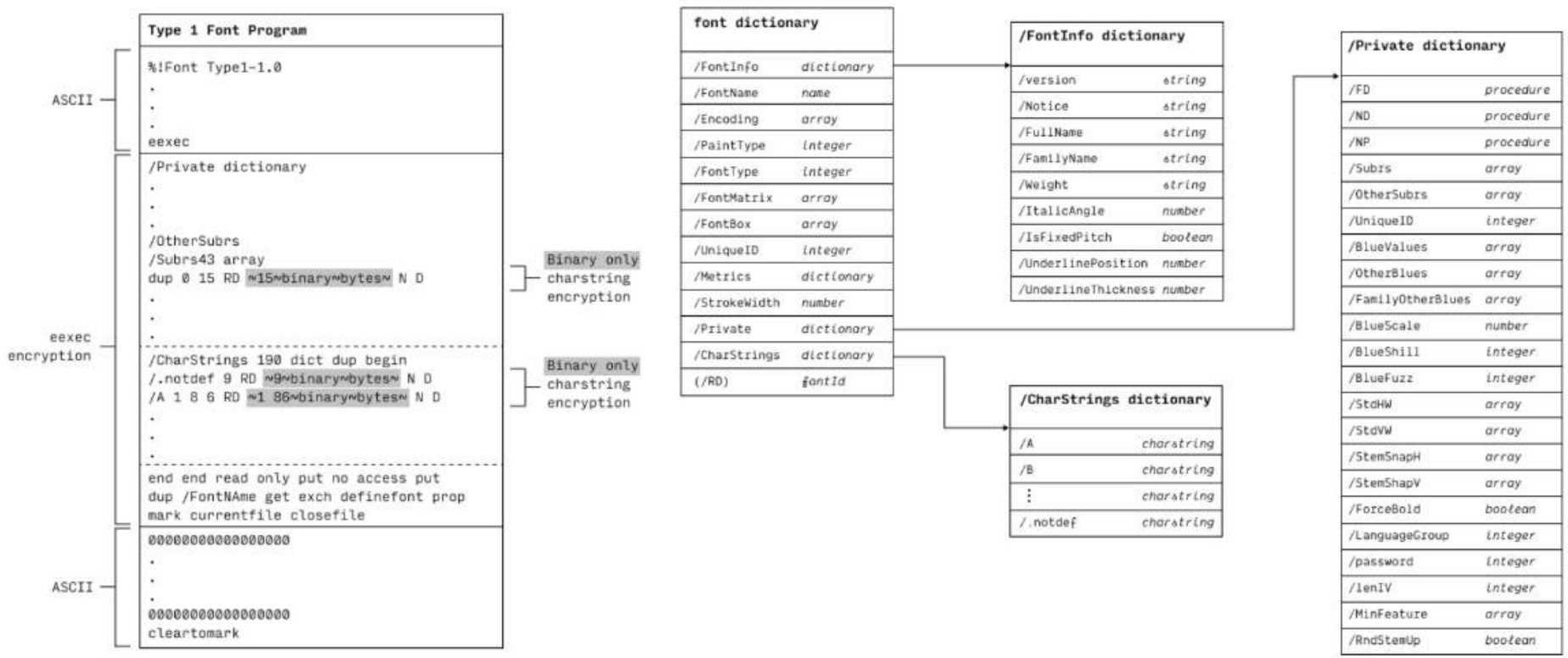


Bitmap fonts





PostScript



Type 1 font program

The Font Wars by Typography.Guru

https://youtu.be/5X9Dj7tBlkg

Font formats for web use

WOFF2 (Web Open Font Format 2)	Microsoft, moz://a, Opera
WOFF (Web Open Font Format)	Microsoft, moz://a, Opera
OTF (OpenType)	Microsoft, Adobe
TTF (TrueType)	Microsoft, Apple
EOT (Embedded Open Type)	Microsoft
SVG (Scalable Vector Graphics)	W3C SVG

Chinese typeface design

https://huijing.github.io/slides/81-typetechmunich-2020

@hj_chen

Web fonts

3. Adding WebFonts to CSS

The *font description* provides the bridge between a *font reference* (within a stylesheet) and the *font data* , which is the data needed to format text and to render the glyph representations to which the characters map - the actual scalable outlines or bitmaps. Fonts are referenced by style sheet properties. The font description is used to select the relevant font data. The font description consists of *descriptors* which provide the location of the font data on the Web, and/or characterize that font data. The font descriptors are also used to match font references with the correct font description.

Font descriptors may be classified into three types:

1. those that provide the link between the CSS usage of the font and the font description - these have the same names as the corresponding CSS font properties
2. the URL for the *location* of the font data
3. those that further characterize the font, to provide a link between the font description and the font data

Font descriptions are contained in an *at-rule*. At-rules - so called because they start with the @ symbol - were introduced in CSS 1 where they were used to import other stylesheets. Ordinary CSS rules start with a selector, and apply solely to the selected HTML elements. At-rules have no selector, and apply to the whole style sheet.

The general form of this new at-rule is

```
"@font-face { <font description> }"
```

where the font description has the form

```
descriptor: value;
descriptor: value;
[...]
descriptor: value;
```

For example, here the font 'Robson Celtic' is defined and referenced in a style sheet contained in an HTML document.

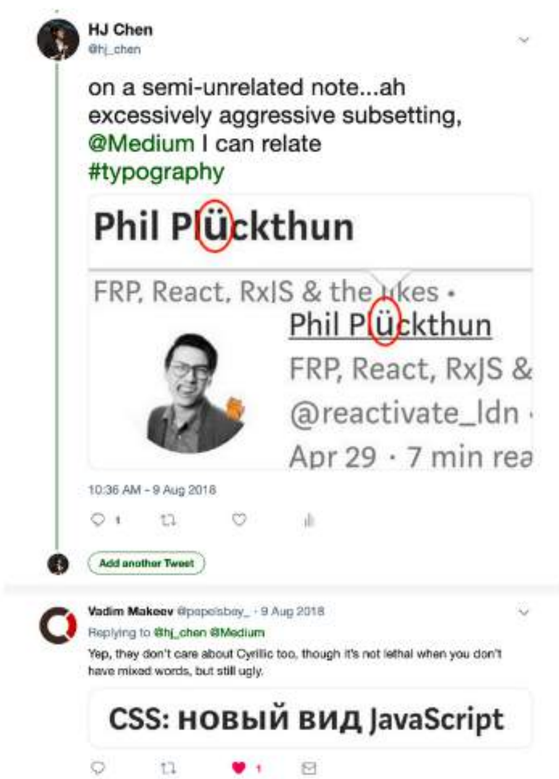
Earliest reference of webfonts I could find (21-Jul-1997)

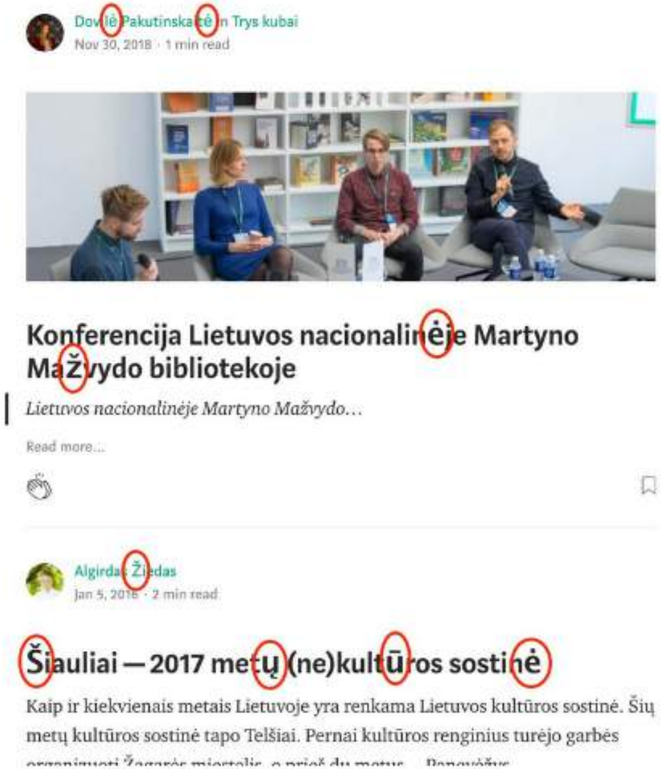
Font stacks

```
/* This text is in Lucida Grande */
.sans {
  font-family: Lucida Grande,Lucida Sans Unicode,Lucida Sans,Geneva,Verdana,sans-serif;
}

/* A typical Chinese font stack, declare Latin fonts first */
.zh-hans {
  font-family: Tahoma, Helvetica, Arial, "Microsoft Yahei", "微软雅黑", STXihei, "华文细黑", sans-serif
}
```

Subset fail


HJ Chen
@hj_chen
on a semi-unrelated note...ah excessively aggressive subsetting, @Medium I can relate #typography
Phil Plückthun
FRP, React, RxIS & the ukes •
Phil Plückthun
FRP, React, RxJS &
@reactivate_ldn
Apr 29 · 7 min rea
10:36 AM - 9 Aug 2018
Add another Tweet
Vadim Makeev @papeisbay_ · 9 Aug 2018
Replying to @hj_chen @Medium
Yep, they don't care about Cyrillic too, though it's not lethal when you don't have mixed words, but still ugly.
CSS: новый вид JavaScript


Dovilė Pakutinskaitė in Trys kubai
Nov 30, 2018 · 1 min read
Konferencija Lietuvos nacionalinėje Martyno Mažvydo bibliotekoje
Lietuvos nacionalinėje Martyno Mažvydo…
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Algirdas Žiedas
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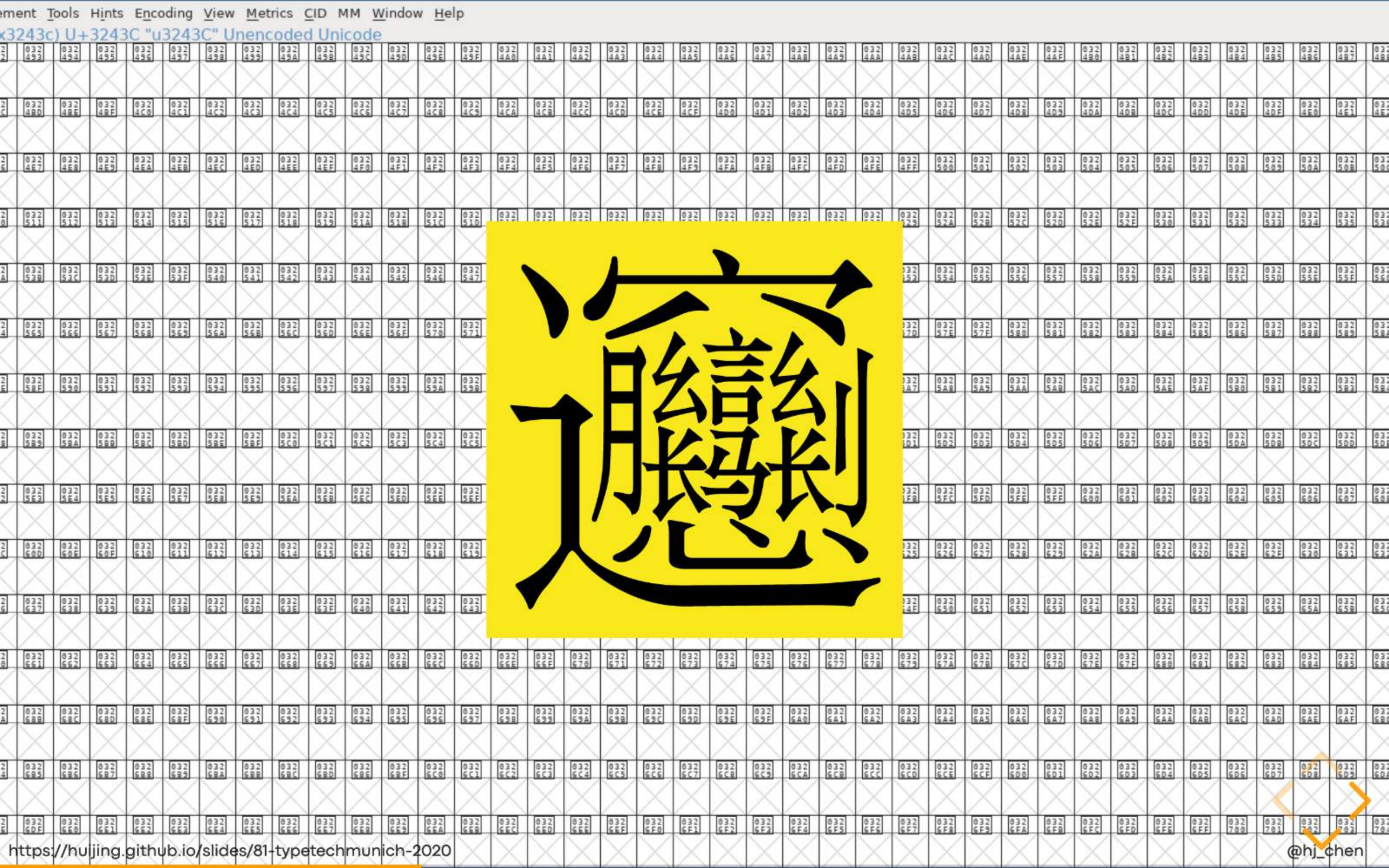
Šiauliai — 2017 metų (ne)kultūros sostinė
Kaip ir kiekvienais metais Lietuvoje yra renkama Lietuvos kultūros sostinė. Šių metų kultūros sostinė tapo Telšiai. Pernai kultūros renginius turėjo garbės


ement Tools Hints Encoding View Metrics CID MM Window Help
x3243c) U+3243C "u3243C" Unencoded Unicode
https://hujing.github.io/slides/81-typetechmunich-2020
@hj_chen

@font-face rule

```
@font-face {
  font-family: 'Bellato';
  src: url('Bellota-Regular.woff2') format('woff2'),
       url('Bellota-Regular.woff') format('woff');
}
```

WOFF - Web Open Font Format

Compressed TrueType/OpenType font that contains information about the font's source.

IE	Edge	Firefox	Chrome	Safari	iOS Safari	Opera Mini	Chrome for Android	Android Browser	Samsung Internet
9	86	83	86	13	13.3			4.4	11.2
10	87	84	87	13.1	13.7			4.4.4	12.0
11	88	85	88	14	14.4	all	88	81	13.0
		86	89	TP					

✓ ✗ Partial Support

Global: 97.74% + 0% = 97.74%

Data from caniuse.com | Embed from caniuse.bitsofco.de

Disable accessible colours

WOFF - Web Open Font Format

Compressed TrueType/OpenType font that contains information about the font's source.

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✓ ✗ Partial Support

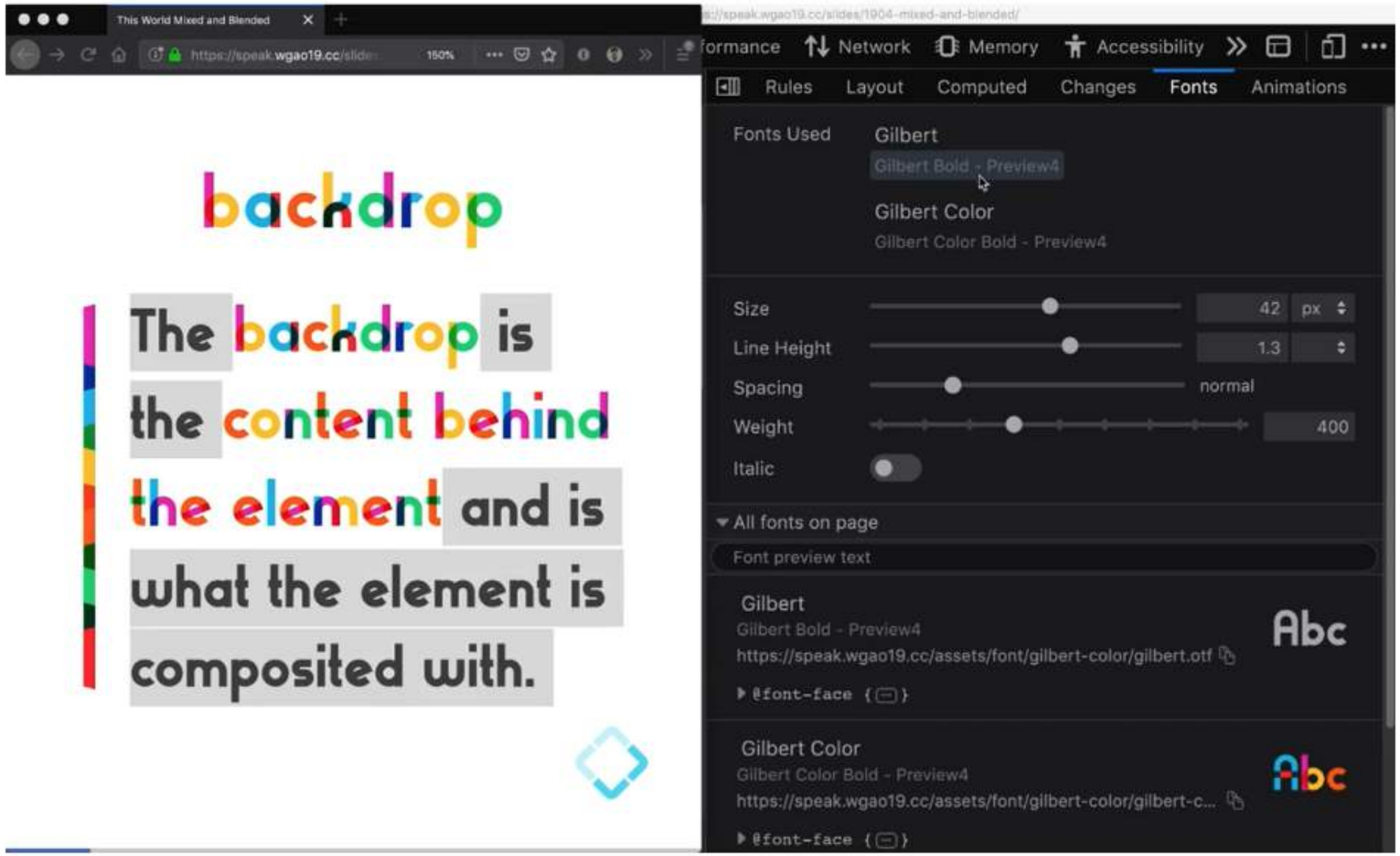
Global: 97.74% + 0% = 97.74%

Data from caniuse.com | Embed from caniuse.bitsofco.de

Disable accessible colours

Anatomy of an @font-face rule

```
@font-face {
  font-family: <family-name>;
  src: [ <url> [format(<string> #)]? | <font-face-name> ] #;
  font-style: normal | italic | oblique ;
  font-weight: normal | bold | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900;
  font-stretch: normal | ultra-condensed | extra-condensed | condensed | semi-condensed | semi-expand
  unicode-range: <urange> #;
  font-variant: normal | none | [ <common-lig-values> || <discretionary-lig-values> || <historical-lig
  font-feature-settings: normal | <feature-tag-value> #;
}
```



Slides for *This world mixed and blended* by Gao Wei.

Raleway

Multiple Designers (18 styles)

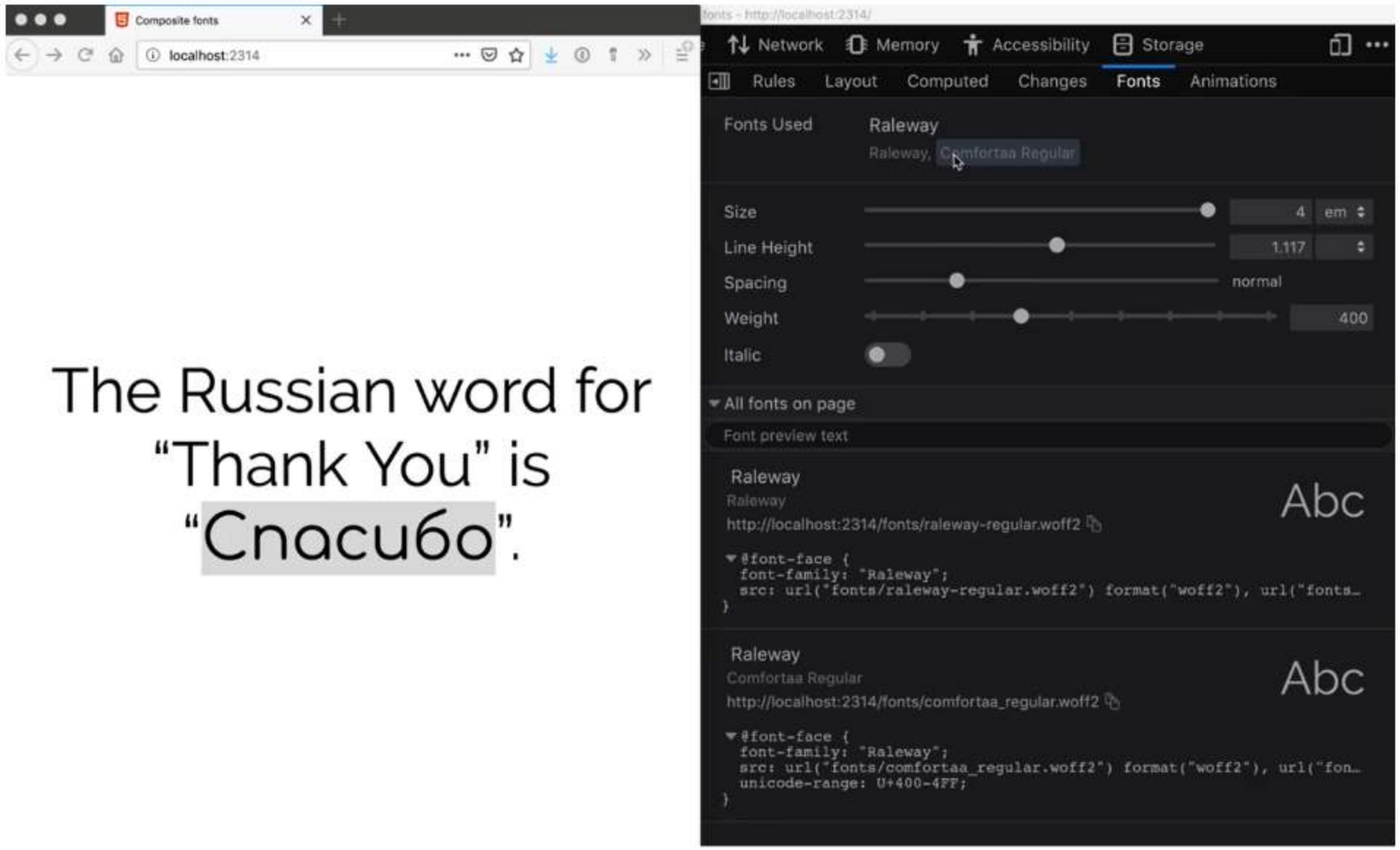
This font does not support Cyrillic characters

Comfortaa

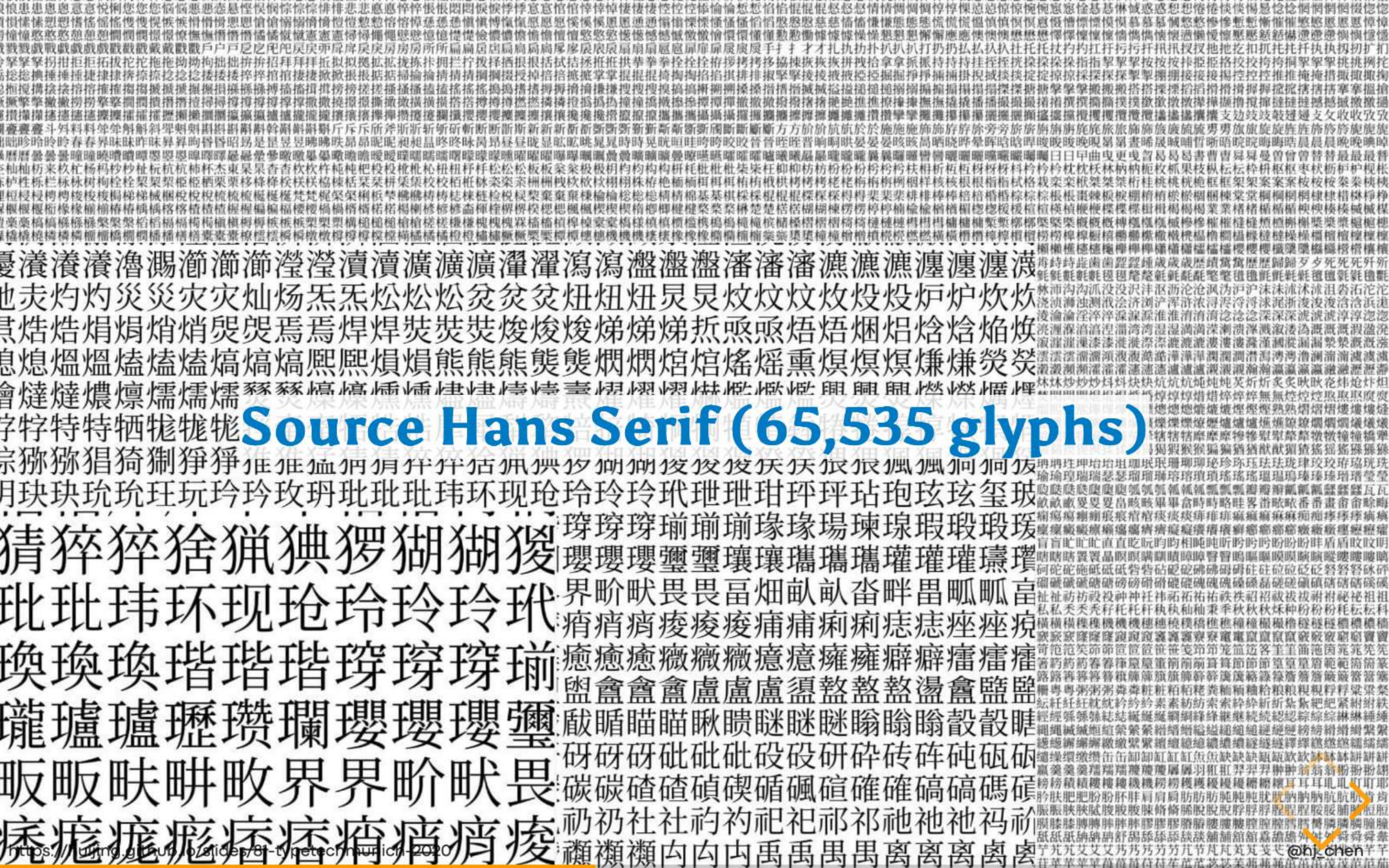
Johan Aakerlund, Cyreal (5 styles)

Этот шрифт поддерживает символы кириллицы

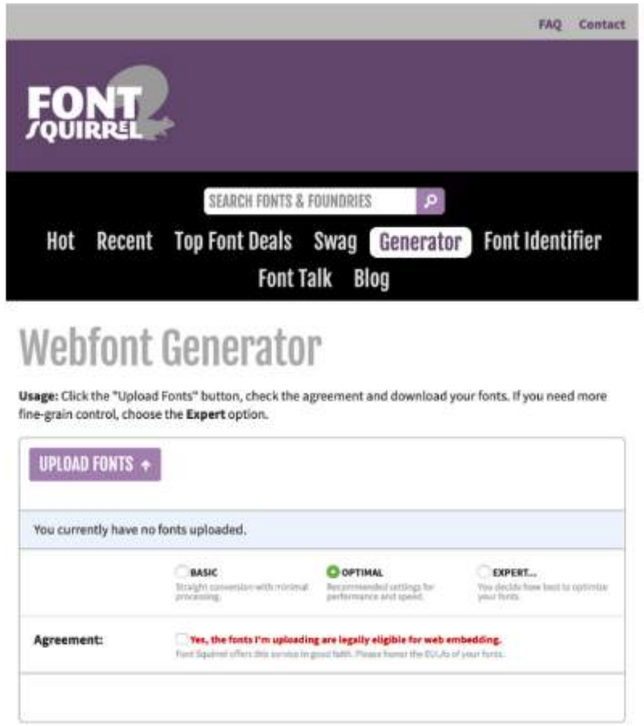
```
@font-face {
  font-family: 'Raleway';
  src: url('fonts/raleway-regular.woff2') format('woff2'),
       url('fonts/raleway-regular.woff') format('woff');
  /* no range specified, defaults to entire range */
}

@font-face {
  font-family: 'Raleway';
  src: url('fonts/comfortaa_regular.woff2') format('woff2'),
       url('fonts/comfortaa_regular.woff') format('woff');
  unicode-range: U+0400-U+04FF; /* Unicode range for Cyrillic characters */
}
```



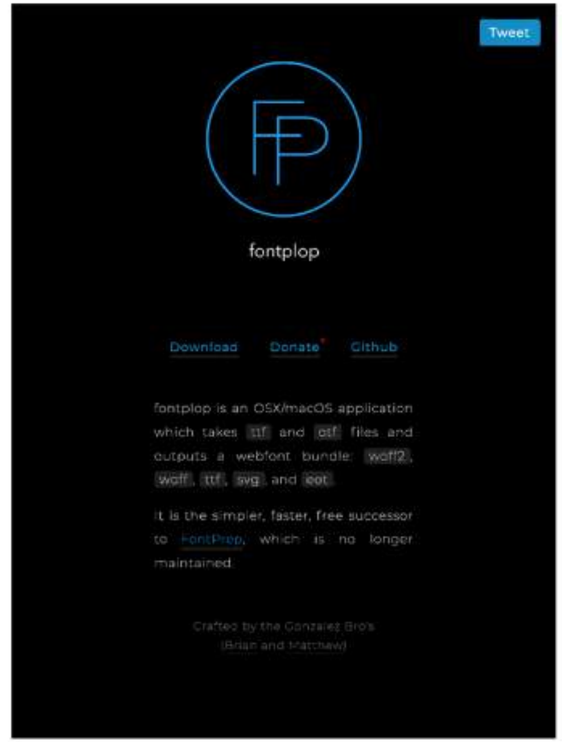
The Russian word for "Thank You" is "Спасибо".


Source Hans Serif (65,535 glyphs)

Subsetting web fonts



Font Squirrel



FontPlop

Font Spider

Variable fonts

DRAGONS

Space

Weight

Progressive Font Enrichment

> *“to enable the ability for **only the required part** of the font be downloaded on any given page, and for subsequent requests for that font to **dynamically ‘patch’** the original download with additional sets of glyphs as required on successive page views—even if they occur on separate sites”*
>
> *—Jason Pamental on Web Fonts & Typography News #11*

Incremental Transfer Demo

Add Text

Add Latin 1 | Add Latin 2 | Add Latin 3 | Add Latin 4 | Add Cyrillic 1 | Add Cyrillic 2 | Add Vietnamese 1 | Add Vietnamese 2 | Add Japanese 1 | Add Japanese 2 | Add Arabic 1 | Add Arabic 2 | Add Devanagari 1 | Add Devanagari 2

Transfer Options

NOTE: all options other than incremental transfer break layout features across segments. In reality this forces the use of large blocks in many scenarios (Arabic, Indic, many latin cases, etc).

148 codepoints (17 + 21 + 23 + 64 + 23) in Demo Content

Options:

A) What Google Fonts would send today, ∑size 34.9 KB:

[13.8 KB cyrillic] [21.2 KB latin]

B) woff2 of each segment, ∑segments 21.7 KB:

[4.3 KB woff2] [5.5 KB woff2] [6.1 KB woff2] [3.0 KB woff2] [2.8 KB woff2]

C) Incremental Transfer. ∑patches 10.3 KB:

[4.3 KB patch] [2.9 KB patch] [2.8 KB patch] [0

D) Optimal, woff2 of the exact subset:

[8.8 KB woff2]

Demo Content

Clear

आकाश में बादल नहीं थे और उसका रंग गहरा नीला था।

ظهرت الأرض تحت السفينة الطائرة في البعد على شكل هلال متلألئ.

各部位を正確に作るには時間がかかるので、当初の意図とは異なるが、巨大な人体を作ることにした。高さは約 8 フィートで、これに釣り合う体格だ。これを決断し、数か月にわたって材料を集め整理した後、作業を開始した。

Развернувшееся зрелище и впрямь было грандиозным.

I used to be a coder like you until I took an ARROW in the KNEE!

Google Fonts' Incremental Transfer Demo

fi Variable fonts supp

Hi, I'm Jason

My name is Jason Pamental. I'm a design strategist, UX leader, technologist, expert in web typography, and Invited Expert on the W3C Web Fonts Wor

https://rwt.io/newsletter

brand owners on how to set type better on digital platforms. I've spoken with organizations like Adobe, Audible, Condé Nast, GoDaddy, IBM—and given presentations and workshops at conferences all over the world. I also publish a newsletter on web typography.

Type is how we 'hear' what we read

Since the introduction of Variable Fonts in late 2016, I've spent a good deal of time researching, writing about, and working with them, and am convinced they are the future of type—and indeed design—on the web. I've de-

Typesetting on the web

> *Authors should language-tag their content accurately for the best typographic behaviour.*
>
> —*CSS Text Module Level 3*

OpenType features

- aalt
- abvf
- abvm
- abvs
- afrc
- akhn
- blwf
- blwm
- blws
- calt
- case
- ccmp
- cfar
- cjct
- clig
- cpct
- cpsp
- cswh
- curs
- cv01 – cv99
- c2pc
- c2sc
- dist
- dlig
- dnom
- dtls
- expt
- falt
- fin2
- fin3
- fina
- flac
- frac
- fwid
- half
- haln
- halt
- hist
- hkna
- hlig
- hngl
- hojo
- hwid
- init
- isol
- ital
- jalt
- jp78
- jp83
- jp90
- jp04
- kern
- lfbd
- liga
- ljmo
- lnum
- locl
- ltra
- ltrm
- mark
- med2
- medi
- mgrk
- mkmk
- mset
- nalt
- nlck
- nukt
- numr
- onum
- opbd
- ordn
- ornm
- palt
- pcap
- pkna
- pnum
- pref
- pres
- pstf
- psts
- pwid
- qwid
- rand
- rclt
- rkrf
- rlig
- rphf
- rtbd
- rtla
- rtlm
- ruby
- rvrn
- salt
- sinf
- size
- smcp
- smpl
- ss01
- ss02
- ss03
- ss04
- ss05
- ss06
- ss07
- ss08
- ss09
- ss10
- ss11
- ss12
- ss13
- ss14
- ss15
- ss16
- ss17
- ss18
- ss19
- ss20
- ssty
- stch
- subs
- sups
- swsh
- titl
- tjmo
- tnam
- tnum
- trad
- twid
- unic
- valt
- vatu
- vert
- vhal
- vjmo
- vkna
- vkrn
- vpal
- vrt2
- vrtr
- zero

S

Font feature properties

font-kerning

AV Wa

No kerning

AV Wa

Kerning applied

font-variant-position

$C_{10}H_{16}N_5O_{13}P_3$

$C_{10}H_{16}N_5O_{13}P_3$

font-variant-position-ligatures

fi ▸ fi tz ▸ ꝯ

WORDS ▸ WORDS

labor of love ▸ labor of love

font-variant-numeric

1st 17th 2a ▸ 1st 17th 2a

2 1/3 ▸ 2⅓

4000 ▸ 4000

2 1/3 ▸ $2\frac{1}{3}$

Lining	Old-Style
409,280	409,280
367,112	367,112
155,068	155,068
171,792	171,792

font-variant-caps

The DOM, the HTML syntax, and the XHTML syntax cannot all represent the same content. For example, namespaces cannot be represented using the HTML syntax, but they are supported in the DOM and in the XHTML syntax.

font-variant-alternates

Jesuits ▸ Jeſuits

quick ▸ quick Quick ▸ Quick

incroyable ▸ incroyable

• ▸ ⁂ ⁘ ⁙ 519 ▸ ⑤①⑨

Font metrics are crucial

font-variant-east-asian

Allows control of glyph substitution and sizing in East Asian text

一個簡體字可能對應多個繁體字，如簡體字「發」，其相應的繁體字可能為「發」或「髮」；一個繁體漢字對應多個簡體漢字的情況與前者相比數量極少但仍需註意，如繁體字「乾」可能對應簡體字「幹」或「乾」。繁簡漢字的對應關係具體應由上下文決定。

莰　　噓

```
.fvea .han {
  font-variant-east-asian:
traditional;
}

.fvea .jap {
  font-variant-east-asian: jis78;
}
```

font-language-override

To control the use of language-specific glyph substitutions and positioning

```
<!-- Macedonian lang code -->
<body lang="mk">
  <h4>Член 9</h4>
  <p>Никој човек нема да биде подложен на
произволно апсење, притвор или прогонување.
</p>
</body>
```

```
body {
  /* Serbian OpenType language tag */
  font-language-override: "SRB";
}
```

Example lifted from CSS Fonts Module Level 4

The `text-transform` property

If I want [flowers], I`m going to send them to myself.

Süße Soßen-Klöße genießen maßgeblich gefräßige preußische Nutznießer.

Ουδέν κακόν αμγές καλού.

ア イ ウ エ オ カ ク ケ

```
.txt-trans p {
  text-transform: normal;
}
```

The `text-emphasis` property

We use *italics* to emphasise words in English, 但是中文则是用着重号.

```
<p>We use <em>italics</em> to emphasise words in E
```

```
.lang-pc em:lang(zh) {
  font-style: normal;
  text-emphasis: dot;
}
```

text-align & text-justify

- Sets the `text-align-all` and `text-align-last` properties
- Describes how the inline-level content of a block is aligned along the inline axis if the content does not completely fill the line box.

```
text-align: start | end | left | right | center | justify | match-parent | justify-all
```

Values other than `justify-all` or `match-parent` are assigned to `text-align-all` and reset `text-align-last` to `auto`.

Selects the justification method used when a line's alignment is set to justify

```
text-justify: auto | none | inter-word | inter-character
```

text justify web

All Images News Videos Shopping More Settings Tools

About 93,800,000 results (0.61 seconds)

As you can see, the **text** is aligned to the left margin meaning that not all of the **text** will align to the right margin. Here's an example of **justified website text**. As you can see, the **text** is aligned to both the left margin and right margins, meaning that each line will be the same length.

Call me Ishmael. Some years ago – never mind how long precisely – having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehouses, and

designforhackers.com

Don't use fully justified text alignment on your website

https://dmjcomputerservices.com/blog/why-you-shouldnt-align-html-justify/

About this result Feedback

People also ask

Should I justify text?

How do I manually justify text?

How do you justify text in CSS?

What is causing the text to be justified?

Feedback

Justify text with HTML/CSS? Don't do it! - Design for Hackers

https://designforhackers.com/blog/justify-text-html-css/

Justifying text is especially poor on the web. It means spreading out the words on the line to span the

Text alignment and justification

定义了CSS如何支持各种不同国际化语言的书写模式，例如拉丁（Latin）语系及印度（Indic）语系采用从左到右的书写模式，希尔伯特语（Hebrew）或阿拉伯语（Arabic）采用从右到左的书写模式，一些混合了拉丁语和阿拉伯语的文字可能采用双向书写（bidirectional），而一些东亚文字则需要竖排（从上到下）的书写模式。

```
.txt-algn p {
  text-align: justify;
  text-justify: inter-character;
}
```

Vertical text on the web

CSS Writing Modes Level 3 defines CSS features to support for various international writing modes, such as **left-to-right** (e.g. Latin or Indic), **right-to-left** (e.g. Hebrew or Arabic), **bidirectional** (e.g. mixed Latin and Arabic) and **vertical** (e.g. Asian scripts).

writing-mode property

horizontal-tb	从1987到现在
vertical-rl	从1987到现在
vertical-lr	从1987到现在
sideways-rl*	从1987到现在
sideways-lr*	从1987到现在

Properties marked with * have been deferred to Writing Modes Level 4.

`text-orientation` **property**

从1987到现在

mixed

从1987到现在

upright

从1987到现在

sideways

text-combine-upright **property**

民國107年5月25日

none

民國107年5月25日

all

民國107年5月25日

*digits <integer>**

Codepen example for text-combine-upright

古巴
Cuba

乌克兰
Ukraine

列支敦斯登
Liechtenstein

Not just for East Asian text

Magie

"Zwei Dinge sind unendlich, das Universum und die menschliche Dummheit, aber bei dem Universum bin ich mir noch nicht ganz sicher."

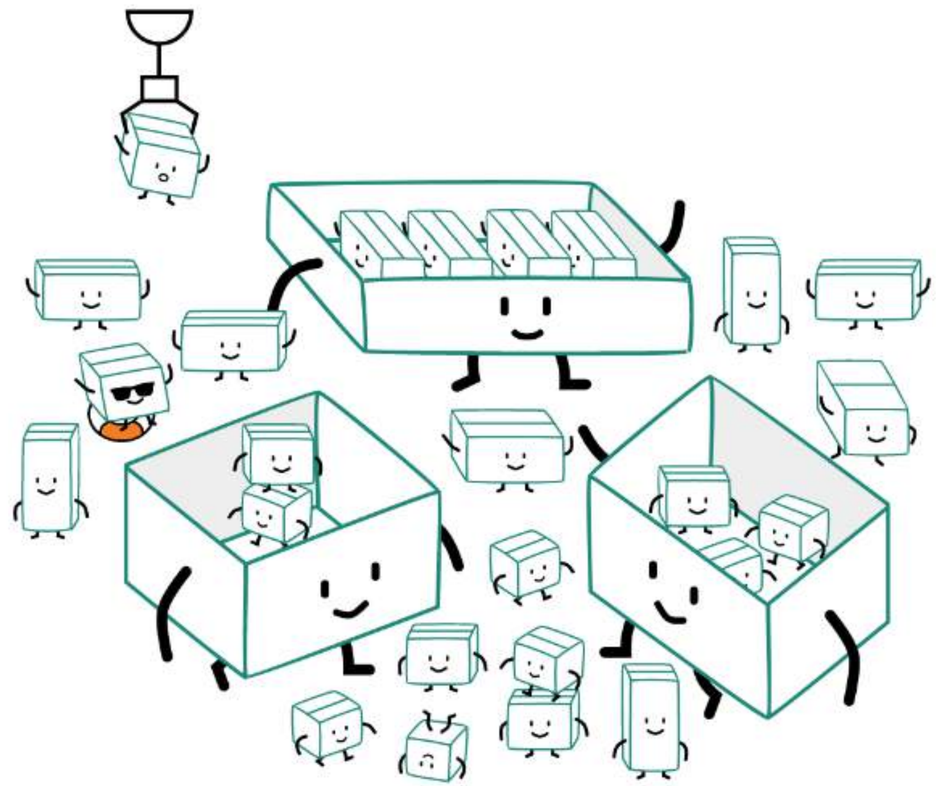
Es liegt der heiße Sommer
Auf deinen Wängelein;
Es liegt der Winter, der kalte,
In deinem Herzchen klein.

Das wird sich bei dir ändern,
Du Vielgeliebte mein!
Der Winter wird auf den Wangen,
Der Sommer im Herzen sein.

Das Leben ist kein Ponyhof

```
}

.wm-cont2 .upright {
  text-orientation: upright;
}

.wm-cont2 .vert-lr {
  writing-mode: vertical-lr;
  color: #ff9b00;
}

.wm-cont2 .rotate {
  transform: rotate(180deg);
  color: #007bc3;
}
```

Everything is a box on the web



Line breaks in inline boxes

If an element *generates zero boxes*, was it **really there** at all?

```
<p class="line-container">If an element
<em>generates zero boxes</em>, was it
<strong>really there</strong> at all?</p>
```

```
.linebox p.line-container {
  font-size: 150%;
}

.linebox .line-container em {
  background-color: limegreen;
  padding: 0.25em;
  mix-blend-mode: color;
}
```

CSS for controlling line breaks

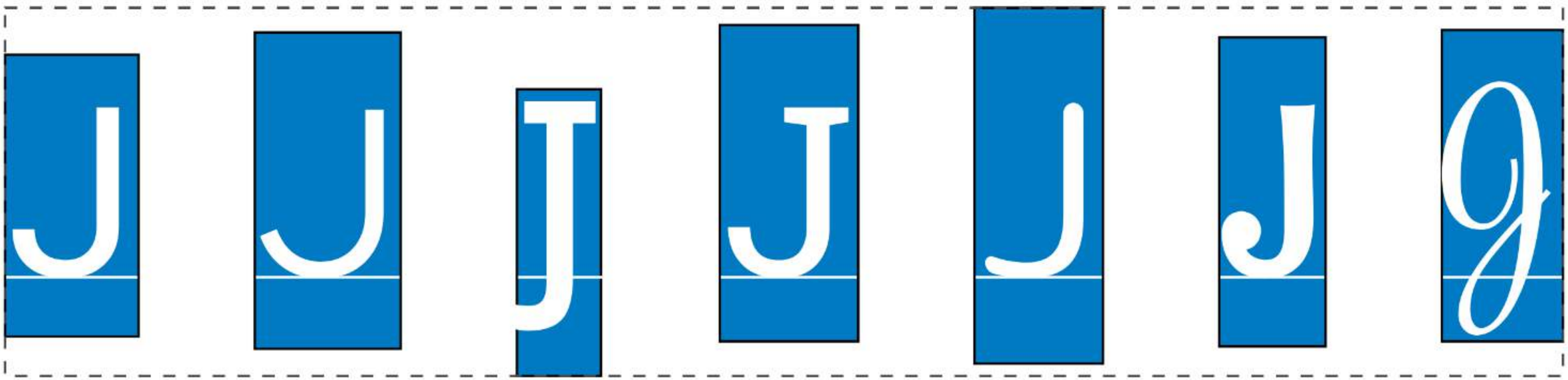
`line-break`	allows choosing various levels of "strictness" for line breaking restrictions
`word-break`	controls what types of letters are glommed together to form unbreakable "words", causing CJK characters to behave like non-CJK text or vice versa
`hyphens`	controls whether automatic hyphenation is allowed to break words in scripts that hyphenate
`overflow-wrap`	allows the UA to take a break anywhere in otherwise-unbreakable strings that would otherwise overflow

Line breaking by Florian Rivoal @ dotCSS

Future improvements to web typography

- CSS Rhythmic Sizing
- CSS Inline Layout Module Level 3
- CSS Text Module Level 4
- CSS Text Decoration Module Level 4

The leading problem



The interruption problem

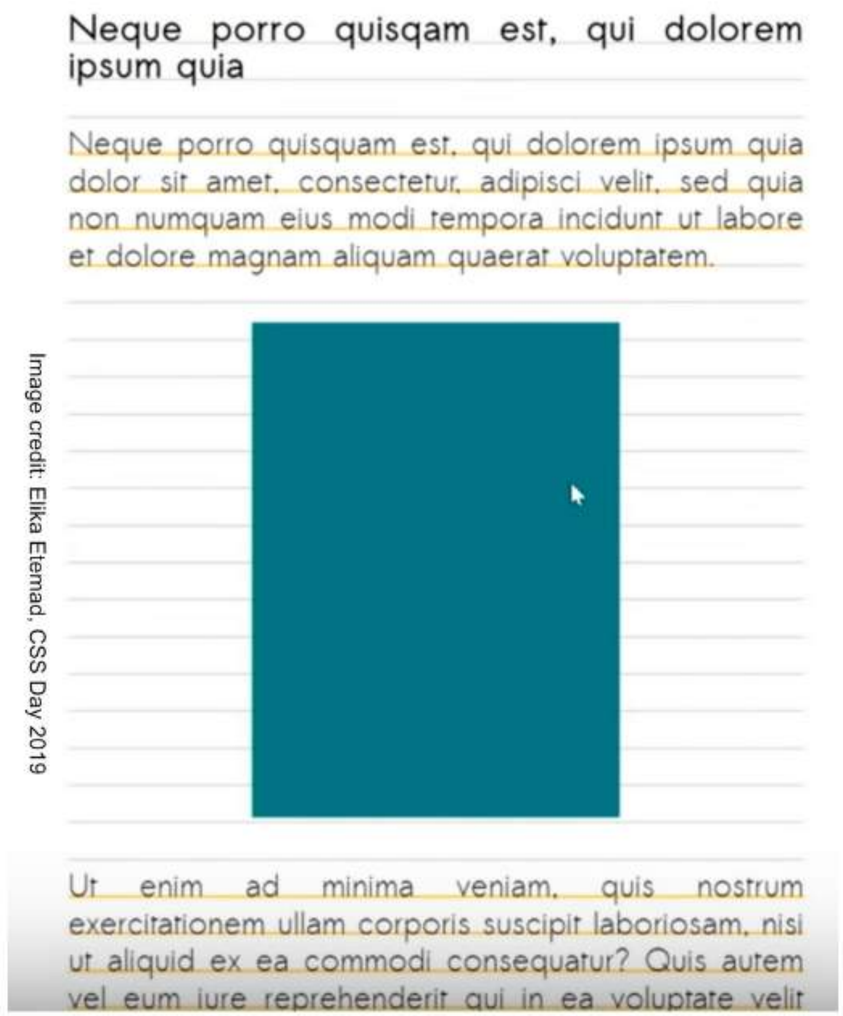


Image credit: Elika Etemad, CSS Day 2019

CSS Line Layout and Vertical Rhythm

Imagine an alternate history…

References

- Lunde, K. (2009). *CJVK Information Processing.* Beijing: O`Reilly
- Haralambous, Y. (2007). *Fonts & Encodings.* Beijing: O`Reilly
- Gillam, R. (2003). *Unicode demystified: a practical programmers guide to the encoding standard.* Boston, MA: Addison-Wesley.
- Dyson, M. C., & Suen, C. Y. (2016). *Digital fonts and reading.* New Jersey: World Scientific.
- The Absolute Minimum Every Software Developer Absolutely, Positively Must Know About Unicode and Character Sets (No Excuses!)
- Choosing & applying a character encoding
- Fonts and Keyboards
- Type rendering on the web
- Mac內建字體的故事：柊野明朝與游明朝
- Font smoothing, anti-aliasing, and sub-pixel rendering
- Laissez-faire Font Smoothing and Anti-aliasing
- A Closer Look At Font Rendering

Thank you

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