

syllabus

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summary of links

shared doc: https://docs.google.com/document/d/17TZCYl4rK4o6QOaz2_BrJfJvaANSpn61oqRZtHOWAc/edit

- includes lecture outlines, slides, and FAQ

exercise submissions: <https://forms.gle/Mqyzot7crKNopBZz5> or A16426-teachers@esp.mit.edu

word/name/phrase suggestions: <https://forms.gle/aWMeVJUUs6fVvSCq5>

questions, comments, feedback: <https://forms.gle/fEtnkAAzJqJ3QUxAA> or A16426-teachers@esp.mit.edu

discord server: <https://discord.gg/ambigram-aficionados-931299799142137927>

other websites: ambigr.am

course description (you already know this)

an ambigram is a visual design with a word or phrase written in such a way that you can read it from multiple perspectives. scroll through <https://en.wikipedia.org/wiki/Ambigram> for concrete examples—they're really cool!

this class will progressively introduce techniques for making ambigrams and guide you through making your own! we will mostly focus on rotational ambigrams, but we will also discuss and try other types of ambigrams. your ideas for words/phrases (e.g. your names!) that we should make ambigrams of are welcome! come dive into an art form that is a wonderful mix of lettering and puzzle-solving!

brush pens and chisel-tip markers will be provided, and calligraphy/typography basics will be covered (so no experience needed!). a tablet or phone that has a drawing app with a symmetry feature is nice to have, but optional.

for you to do

each class will have exercises (in the form of a list of words to ambigram) accompanying it, to help you practice and reinforce concepts. **each week, we'll go through last week's exercises** (e.g. thought process, (potentially) feedback, etc.), so it's valuable to have tried them in your own time (hopefully, if you're here, you're excited enough about ambigrams to do so Anyway)!

- you can submit your work **anonymously** to this form: <https://forms.gle/Mqyzot7crKNopBZz5>.
- if you want more personalized feedback, you can submit your work **nonymously** by emailing A16426-teachers@esp.mit.edu.

in either case, **i may show your work to the class** (without showing your name) if i encounter particularly instructive examples to give feedback to. **if you don't want me to do this, just say so in the form/in your email.**

to make the class hopefully a little more exciting, **you can submit words/names/phrases that you want us to try ambigramming** to this form: <https://forms.gle/aWMeVJUUs6fVvSCq5>. i'll try to select as many instructive examples as i can, but no guarantees lol (especially because some letter combinations are particularly difficult, or less instructive). **feel free to also use this form to express interest in other (non-rotational) ambigram types**; if a certain ambigram type seems to be popular, we might make more of an effort to discuss it!

if you have a tablet (a phone might also work??), feel free to **download a drawing app that has a symmetry feature** (especially 180° rotational/radial symmetry)! i don't personally use one, so i don't really know what apps are out there, but Autodesk Sketchbook and ibis Paint X seem popular.

if you have any **questions, comments, or feedback** about any of the class sessions, you can submit them to this form: <https://forms.gle/fEtnkAAzJqJ3QUxAA>. we will respond to common questions/comments in class, and to other questions/comments in this shared doc (student names will not be included, of course): https://docs.google.com/document/d/17TZCYyl4rK4o6OOaz2_BrJfJvaANSpn61oqRZtHOWAc/edit.

finally, there is a **Discord server full of ambigram enthusiasts and artists** with whom you can discuss ambigrams and develop your skills!: <https://discord.gg/ambigram-aficionados-931299799142137927>. i'm not allowed to go out of my way to interact with you (and i'm not really active there anymore anyway), but it's a great community :) (of course, you're only allowed to have a Discord account if you're at least 13 years old.) ambigr.am is also a great community and resource where you can share your work and learn.

qr codes

thanks for attending!



shared doc



slides



(non-esp) feedback form

main

extra info

this is stuff we didn't get to in class, either because i thought of it Later, because i forgot to mention it, or because we didn't have time.

week 2

- in calligraphy, we write **stroke by stroke, not letter by letter**. this is why i was showing the basic strokes that make up letters: our new basic unit is the stroke, not the letter—because letters can be decomposed into strokes.
- in latin typography, most fonts *also* follow the general principle for latin letters that we talked about in class (where vertical/down strokes are heavy/thick and horizontal/up strokes are light/thin)! see for yourself:
 - (i suppose a notable exception here is PTBarnum BT, which [reverses its contrast](#) (the term in typography for the difference between thick and thin strokes): its horizontal strokes are thicker than its vertical strokes.)

Abadi MT Condensed Light
Albertus Extra Bold
 Albertus Medium
 Antique Olive
 Arial
Arial Black
 Arial MT
 Arial Narrow
BAZOOKA
 Book Antiqua
 Bookman Old Style
Boulder
 Calisto MT
Calligrapher
 Century Gothic
 Century Schoolbook
Ceramic
 CG Omega
 CG Times
 CHARLESWORTH
Chaucer
 Clarendon Condensed
 Comic Sans MS
COPPERPLATE GOTHIC BOLD
 COPPERPLATE GOTHIC LIGHT

Allegro
Amazona BT
 AmerType Md BT
 Arrus BT
Arvo BT
 AvantGarde Bk BT
 AvantGarde Md BT
BANKGOTHIC MD BT
Benguiat Bk BT
BertholdFashion BT
 BernhardMod BT
BinnerD
BREMEN BD BT
 CaslonOpiface BT
 Charter Bd BT
 Charter BT
 ChelthmITC Bk BT
 CloisterBlack BT
COPPERPLGOTH BD BT
English 111 Kincaid BT
 ENGRAVERS GOTHIC BT
Exotc350 Bd BT
Freeform721 Bk BT
 FrnkGothITC Bk BT

CORNERSTONE
Conant
 Courier
 Courier New
Cuckoo
Dauphin
 Denmark
 Fransiscan
 Garamond
 Geneva
Haettenschweiler
Heather
 Helvetica
 Herald
Impact
 Jester
 Letter Gothic
LITHOGRAPH
 LITHOGRAPH LIGHT
Long Island
 Lucida Console
Lucida Handwriting
 Lucida Sans
 Lucida Sans Unicode

Futura Bk BT
 Futura Lt BT
Futura Md BT
Futura ZBk BT
FuturaBlack BT
 Galliard BT
 Geometr231 BT
Geometr231 Hv BT
 Geometr231 Lt BT
 GeoSlab 703 Lt BT
GeoSlab 703 XBd BT
 GoudyHandtooled BT
 GoudyOLSt BT
Humanst521 BT
Humanst 521 Cn BT
Humanst521 Lt BT
Incised901 Bd BT
Incised901 BT
 Incised901 Lt BT
INFORMAL011 BT
 Kabel Bk BT
Kabel UI BT
Kaufmann Bd BT
Kaufmann BT

Market
Market
 MANSSE IT
 MS LineDraw
 News GothicMT
 OCR A Extended
Old Century
 Pegasus
Pickwick
Poster
Pythagoras
 Script
 Sherwood
SIGNBOARD
 Societ
STEAMER
Storyboard
Subway
 Taloma
 Technical
 Teletype
 Tempus Sans ITC
 Times
 Times New Roman
 Times New Roman PS
 Trebuchet MS
TRIFTAN
Tubular
UNICORN
 Univers
 Univers Condensed
Vagabond
 Verdano
 Westminster

Korinna BT
 Lydian BT
Monotype Corsiva
NewsGoth BT
 Onyx BT
 Outlandcraft BT
PosterBodoni BT
 PTBarnum BT
Riblon 131 Bd BT
Serifa BT
 Serifa Th BT
Shelley Delante BT
Souvenir Lt BT
 Staccato222 BT
Swis721 BkEx BT
Swiss811 Xcm BT
TypoType985
 ZapfEllipt BT
 ZapfHumst BT
 ZapfHumst Dm BT
Zurich BkEx BT
 Zurich Ex BT

week 3

- in going through week 2's exercises, note that it was very possible to have multiple solutions/approaches in terms of downstroke distribution, lettering style, and shape matching!

¹ <https://wavian.com/font-list.html>

“faq”—responses to questions, comments, feedback

submit questions, comments, and/or feedback here (<https://forms.gle/fEtnkAAzJqJ3QUxAA>), or on index cards in class!

lecture outlines (+ slides & exercises)

these are rough bullet points designed for my own teaching, not written-up paragraphs designed for student reading (i'm too busy to do the latter :c). so a lot of the ideas/information here aren't explained or spelled out (though they were in class), but hopefully these are useful for review/remembering what we covered.

in addition, here are the slides for the class:

<https://docs.google.com/presentation/d/14sxXCLAEoDW6RaXolkUaD76OVite87R/edit>.

week 1: history, types of ambigrams, shape matching

history & examples

- rotational (180, 90), mirror, lake, asymmetric, perceptual shift, figure-ground, spinonyms, jumble

techniques

- BALANCE & compromise
- show “bonfire”; use to demonstrate shape matching/choosing letterforms (B/E), choosing lettering style (o/ir), downstroke matching (o/ir, nf/nf), top emphasis (nf/nf)
- shape matching, choosing letterforms, choosing lettering style
 - shape matching: yeah, awesome (y/h, e/a)
 - + choosing lettering style (some glyphs/letterforms require a certain style to work (ex. [“anne” & kai’s tutorial](#))): honey (e/o, n/n)
 - next week, we’ll cover calligraphy techniques
 - choosing letterforms
 - big, bang, dog, songs, single: b/g, o/G, D/G, n/G + a/n, n/n, e/s
 - vanes: v/{s}
 - match letterforms throughout a design
 - capitalize start of words, for multi-word ambigrams

EXERCISES: bog, god, vista, bane, blouse, drive

week 2: calligraphy, downstroke matching

week 1 exercises:

- bog: same as big (descenders match)
- god: same as dog (curvature of D and G match)
- vista: V/A (your choice of t vs. T)
- bane: comic style B/E vs. script style b/e
- blouse: s needs a descender → cursive (i prefer b/e)
- drive: {r}/v, D/e — render in cursive

calligraphy/typography

- calligraphy: writing stroke by stroke, not letter by letter
- typography: down strokes are heavy/thick, up/side are strokes light/thin
- brush: down strokes heavy, up strokes light (see above bullet)
 - 8 basic strokes
- highlighter: keep same angle, break letters into strokes
 - blackletter
 - italic

downstroke matching

- mit
- hi, hint

EXERCISES: veins, think, anthem, titanium

+ try your own words! much more versatile with downstroke matching in your toolbox

week 3: choosing letterforms for downstroke matching

week 2 exercises:

- veins: shape-match v/s; downstroke-match ei/n
 - or e/n with 2 downstrokes each* - student did good job keeping ear(?) of n small (to balance with e not normally having this protrusion)
- think: treating k as 2 downstrokes is cleaner
 - but student solution works with different lettering style!*
- anthem: an/em (2+2 downstrokes = 1+3 downstrokes), th/th (treat t as 1 downstroke, h as 2)
 - remember x-height, ascender height, descender height
- titanium: tit/m, ni/ni. A/U was my solution...
 - ...but can modify student's solution to get a better a/u!* balance "ears" and roundness

* emphasize the possibility of multiple solutions/approaches in terms of

- downstroke distribution
- lettering style
- shape matching

combine choosing letterforms and downstroke matching: consider # downstrokes of various letterforms—mix and match numbers of downstrokes to make the downstroke matching work better

- single-storey a (anthem)/A (titanium, Athena, love/pain)/double-storey a:
 - pain (hint: top emphasis)
 - plant (hint: top emphasis) (note: swastika)

EXERCISES: part, roll, bring, auriform

week 4: swoopies/flourishes

week 3 exercises

- part: P/t, ar/ar (note: swastika) (lowercase r)
 - if a/a (as one student did), i would do cursive r to match curvature of p in p/rt
 - a shape-matching based approach: show student's approach of matching [a + the curl of P] into an R!
 - *(multiple solutions in terms of shape matching/downstroke distribution!)*
- roll: R/ll, o/o (uppercase R)
 - make legs of R parallel to balance/compromise with ll
- bring: b/g, ri/n (cursive r)
 - cursive r matches curvature of n upside-down
 - (r/n (with print r) is difficult because mismatched curvature; r/N is difficult because N looks like N upside down)
- auriform
 - correctly got the intended idea of matching au/m. but in making a 1-downstroke a, we can make the extra stroke a swoopie using A, so it doesn't read like anything upside down
 - bubble letters are also a strategy to squeeze 2 downstrokes right-side up into 1 downstroke upside-down (or vice versa, obviously) (see "double downstrokes" below)
 - nice job identifying rotational symmetry of f and r (i.e. doing f/f and r/r). i/o is weird; suggestions:
 - r/r and if/o using blackletter (cf. bonfire)
 - f/f and ri/o using cursive r to match curvature
 - *(multiple solutions in terms of downstroke distribution and lettering style!)*

emphasize the possibility of multiple solutions/approaches in terms of

- downstroke distribution
- lettering style
- shape matching
- **EXERCISE:** look at our walkthrough of week 2 exercises and identify where we mentioned multiple solutions/approaches in terms of downstroke distribution, lettering style, and/or shape matching

swoopies/flourishes

- emphasis on top (ex. Part, Roll; bonfire; single (s/e); mit; think; all the tittles; pizza P, open-bottom a, & wrong curl in pain, plant, part; P, o, & swoopy in love/pain)
- function 1: decoration: redo mit with ligature between tittle of i and crossbar of t
- function 2: leaving bottoms open (e.g. a)
 - {s}/s¹/s¹/s², e² (mention # downstrokes)
 - o, x:
 - toxin: to/in, x/x
 - Axis
 - discuss A/s xi/xi (note A/s in title + x²)
 - vs. A/is x/x (note A/is in Atlantis) + shape-matched x + balance)

- function 3: hiding extra strokes/downstrokes/letters (ex. Part, Roll, Gemini, Athena, ambigram, what goes up)
 - double downstrokes
 - note that you might want your f in auriform to have crossbars exactly at x-height, in which case you'll need 2 crossbars. this works because of top emphasis (the bottom crossbar is an "extra stroke"), but you can further balance by making the other letters taller

EXERCISES: choose your own words to try! you have a pretty versatile toolbox at this point (week 5 is about more "exotic", and non-rotational, techniques, and week 6 is just free play), including:

- *shape matching* (week 1)
 - balance & compromise
 - choosing letterforms to get matchable shapes
 - choosing *lettering style* (e.g. brush vs. blackletter vs. italic calligraphy)
- downstroke matching (week 2)
 - balance & compromise
 - choosing letterforms to get matchable *numbers of downstrokes* (week 3)
 - choosing *lettering style* (e.g. brush vs. blackletter vs. italic calligraphy)
- swoopies/flourishes (week 4)
 - decoration
 - leaving bottoms open
 - hiding extra strokes/downstrokes/letters

italicized = variables along which there can be multiple solutions!

week 5: more exotic/non-rotational techniques

- asymmetric D/d (rot.), E/E (rot.), r/{r} (lake), n/N (lake)
- offsetting; circular/tessellating ambigrams (banger, banana lounge (discuss compromise: a letterforms, beginning emphasis))
- recall other types (see week 1): rotational (180, 90), mirror, lake, asymmetric, perceptual shift, figure-ground, spinonyms, jumble
- CONTEXT
 - emphasis on beginning of word (earth air fire water, philosophy)
- balance: little features (ex. horizontal line in G or A, curl in r) can improve legibility a lot
- experiment, play around, try multiple designs/solutions (ex. anne, Axis)
- NON-LATIN :DDD