Ethics, Choices, and Values

Hello again!

I'm Katie Creel, the Embedded EthiCS Fellow.

You can always get in touch at kcreel@stanford.edu

Or plan a visit to my office hours at

calendly.com/kathleencreel

Ethics in Stanford CS (since 1989!)

San Jose Mercury News

25 cents | Serving Northern California Since 1851 | March 1, 1989

Enter. What is ethical in computer use? Return

By Tom Philp
Mercury News Staff Writer

A Stanford computer scientist and a philosopher are developing the university's first course to get students to examine the ethical implications of their use of computers.

The broad-ranging course, to be taught this spring, will deal with topics ranging from the outbreak of computer viruses to privacy issues of electronic bulletin boards. While some universities have developed courses to help students prepare for the rapidly changing computer world, no other university in Silicon Valley — or the Bay Area — now offers such a course.

"We're not trying to give them the answers," said Terry Winograd, the associate professor of computer science who is developing the course. "We're trying to get them to do good thinking."

Among the questions to be pondered: should students freely share copyrighted software? Should they be concerned if their work has military applications? Should they submit a project on deadline if they are concerned that potential bugs could ruin others' work?

For two years, Stanford has offered a seminar on computer ethics, but it was for fewer than a dozen students. But the new course, which can satisfy a curriculum requirement for computer science undergraduate students, will probably be several times larger.

"The hope is, we can take students who are currently more oriented in

See ETHICS, Page 8A

The course will address issues like invasion of privacy, ownership of computer programs, and the risks they are introducing to people's lives

OUTLINE

BIAS, FAIRNESS, AND DISTRIBUTION

PROBLEM FORMULATION

LINGUISTIC REPRESENTATION

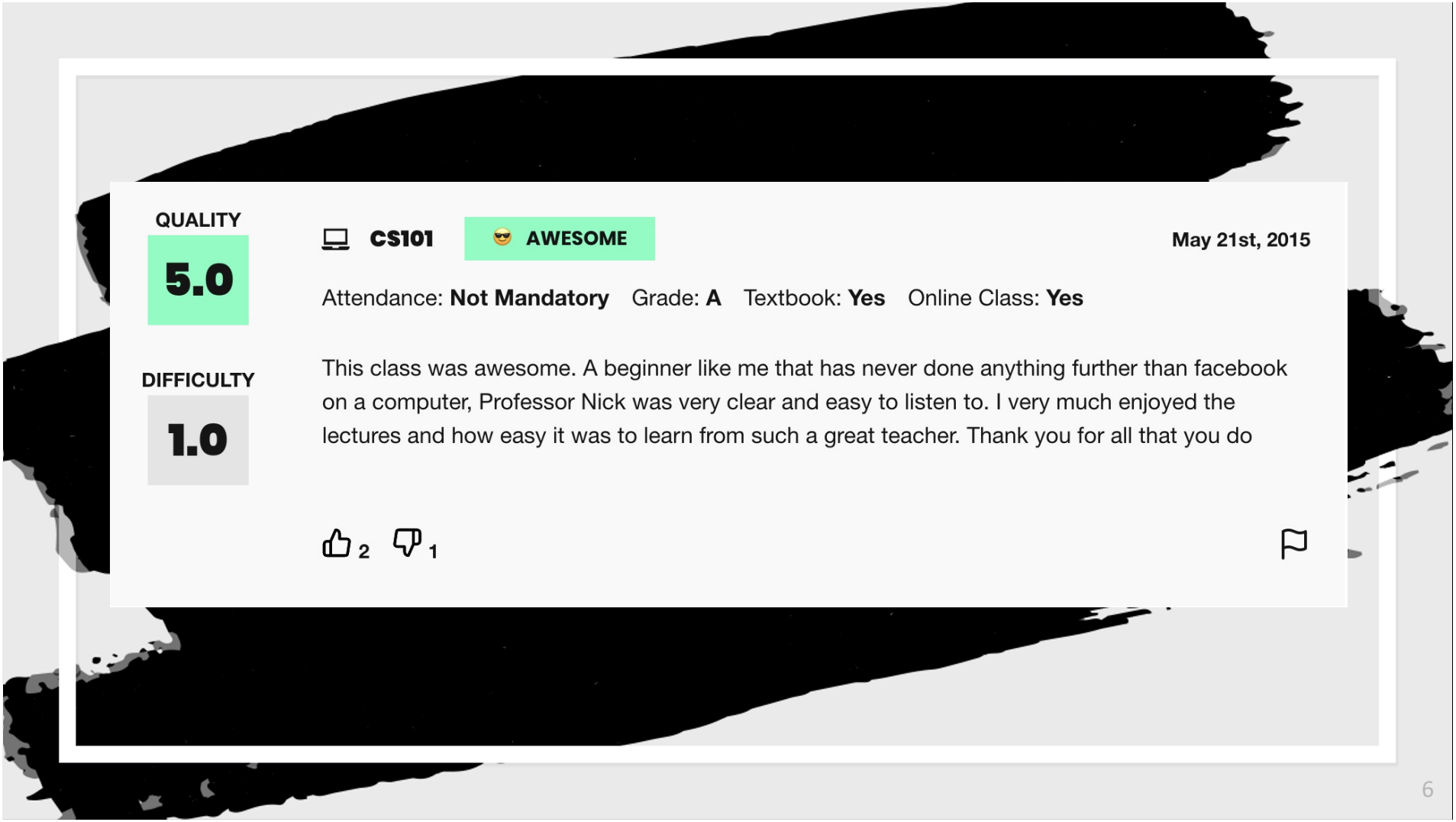
Homework 7b: Analyzing Data Bias

Using Matplotlib

Due: 11:55pm (Pacific Daylight Time) on Wednesday, May 26th

BASED ON PROBLEMS BY COLIN KINCAID, MONICA ANUFORO, JENNIE YANG, NICK BOWMAN, JULIETTE WOODROW, CHRIS PIECH, MEHRAN SAHAMI, AND KATHLEEN CREEL.

In this assignment, we have done almost all of the data processing for you. We have organized the data files and stored them into one json which you will load and then use when writing your code. In this assignment, you will write code to plot the data in an interesting way. Plotting and visualizing across professor gender and review quality reveals interesting trends about human language usage. We hope that you will be able to use this exercise in data visualization to also think critically about the underlying biases that exist in online datasets! The end product of this assignment is a complete application that will help you dig deep into our provided dataset while answering important social and ethical questions along the way.


QUALITY
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CS101
AWESOME
May 21st, 2015
Attendance: Not Mandatory Grade: A Textbook: Yes Online Class: Yes
This class was awesome. A beginner like me that has never done anything further than facebook on a computer, Professor Nick was very clear and easy to listen to. I very much enjoyed the lectures and how easy it was to learn from such a great teacher. Thank you for all that you do
2
1

What can we learn from this data?

In order to know how to use a dataset appropriately,
we need to examine it for patterns of bias.

What is in the Dataset?


You Have the Power to Find Out!
Ethics
Skills
Values &
Habits
CS Skills

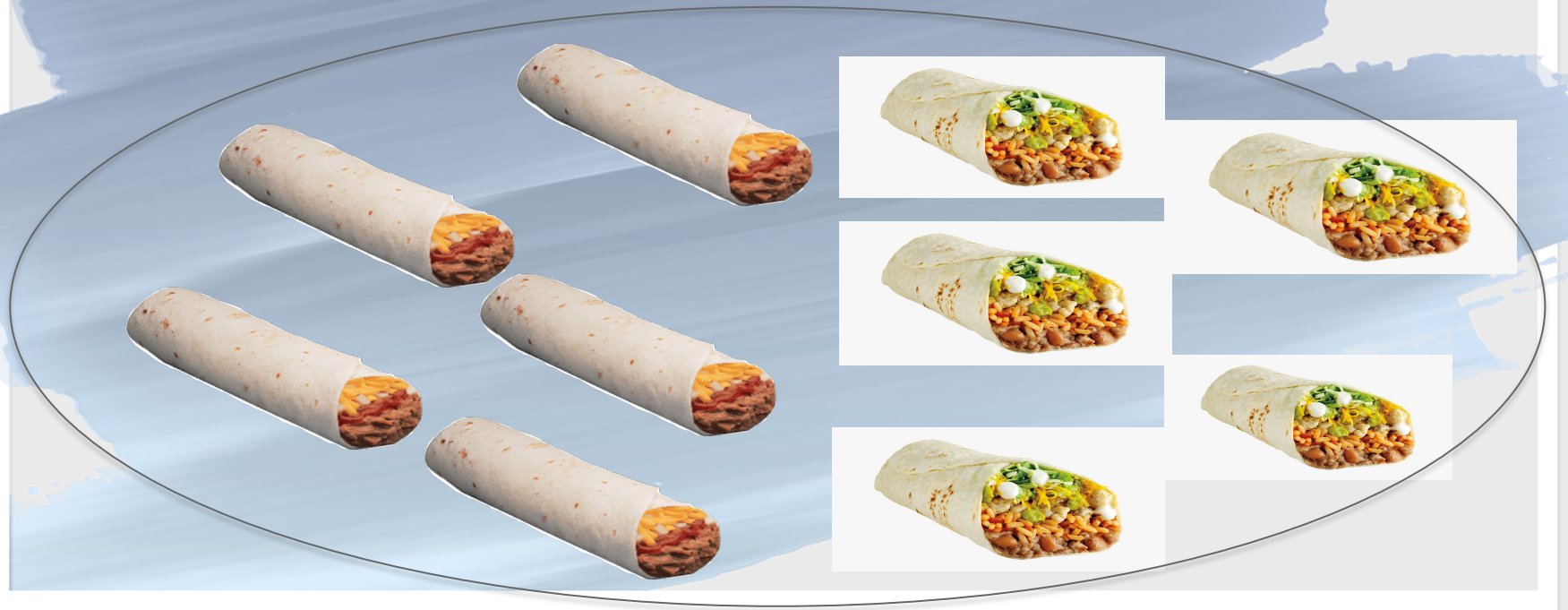
What is Bias?

Statistical bias is the difference between measured results and “true” value.

This is the “neutral” or statistical meaning of the word bias. You will see it often in discussions of patterns in data.

Example: Sampling Bias

Example: Sampling Bias



What Kinds of Bias Raise Ethical Concerns?

Discriminatory Bias in Data

Biased measurement or classification

+ use of that bias to compound existing injustice or to fail to treat all as having equal moral worth

=> *Discriminatory or Unfair* Bias


How does defining bias help us understand our professor ratings data?

Checking a Dataset for Bias

3. DECIDE HOW TO USE DATA GIVEN THE BIAS

Given the bias, for what social purposes would it be appropriate to use this data?

How should we communicate information about possible biases to other people who might want to use the dataset?

1. CHECK FOR (STATISTICAL) BIAS

What correlations and patterns exist in my dataset?

In what ways do they fail to accurately represent patterns, phenomena, or causes in the world?

2. CHECK FOR DISCRIMINATORY BIAS

In what ways do the biases compound existing injustice or fail to treat all people as being of equal moral worth?

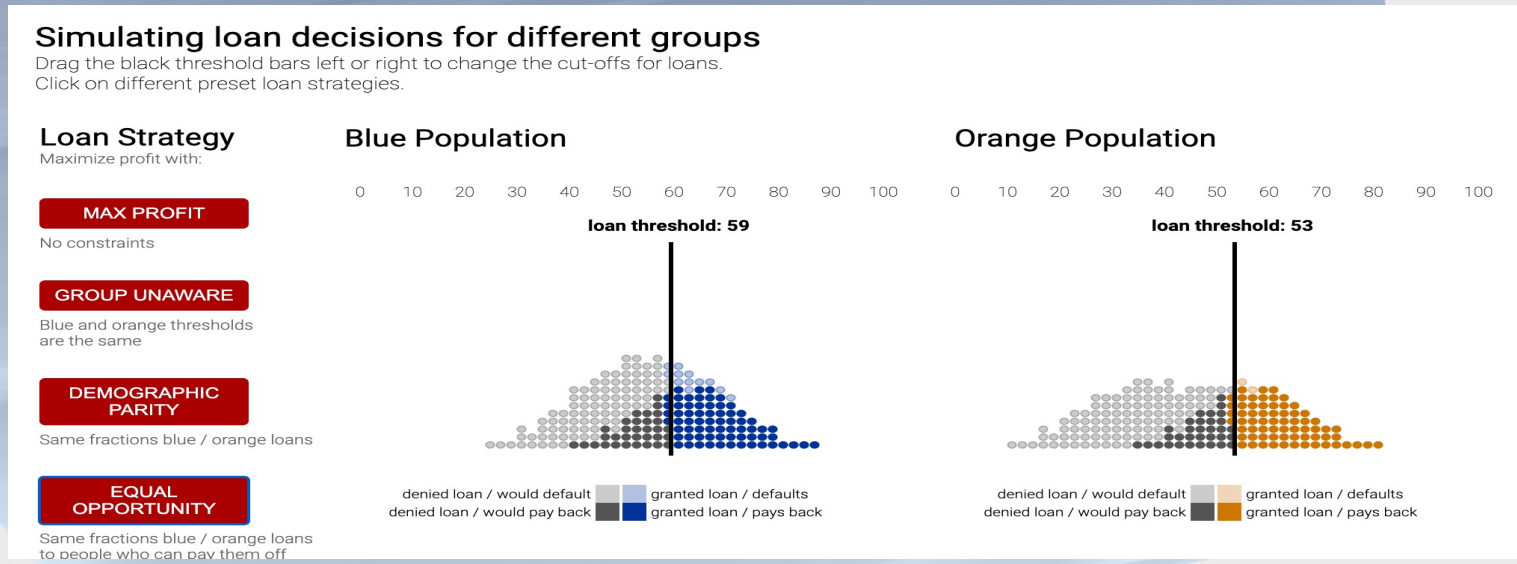

What frameworks can we use to evaluate fair distributions?

Equality of Opportunity:

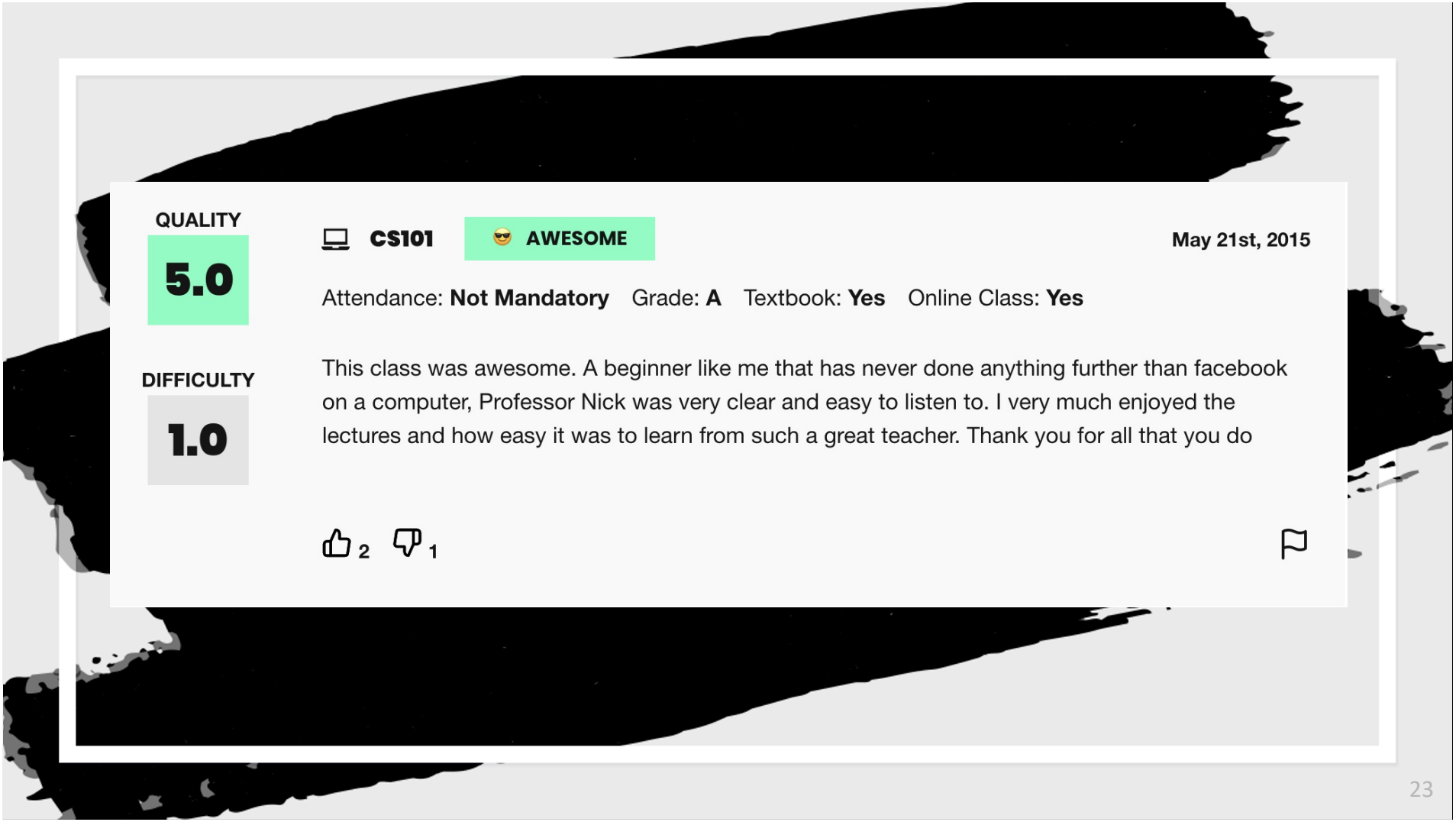
everyone has same opportunity to develop skills needed for the job, apply for the job, and get promoted.

Parity: Everyone is equally likely to be a good teacher, so we should expect to end up with number of good teachers (and high rankings) proportionate to population.

Other Definitions of Fairness



FAIRNESS BEYOND THE NUMBERS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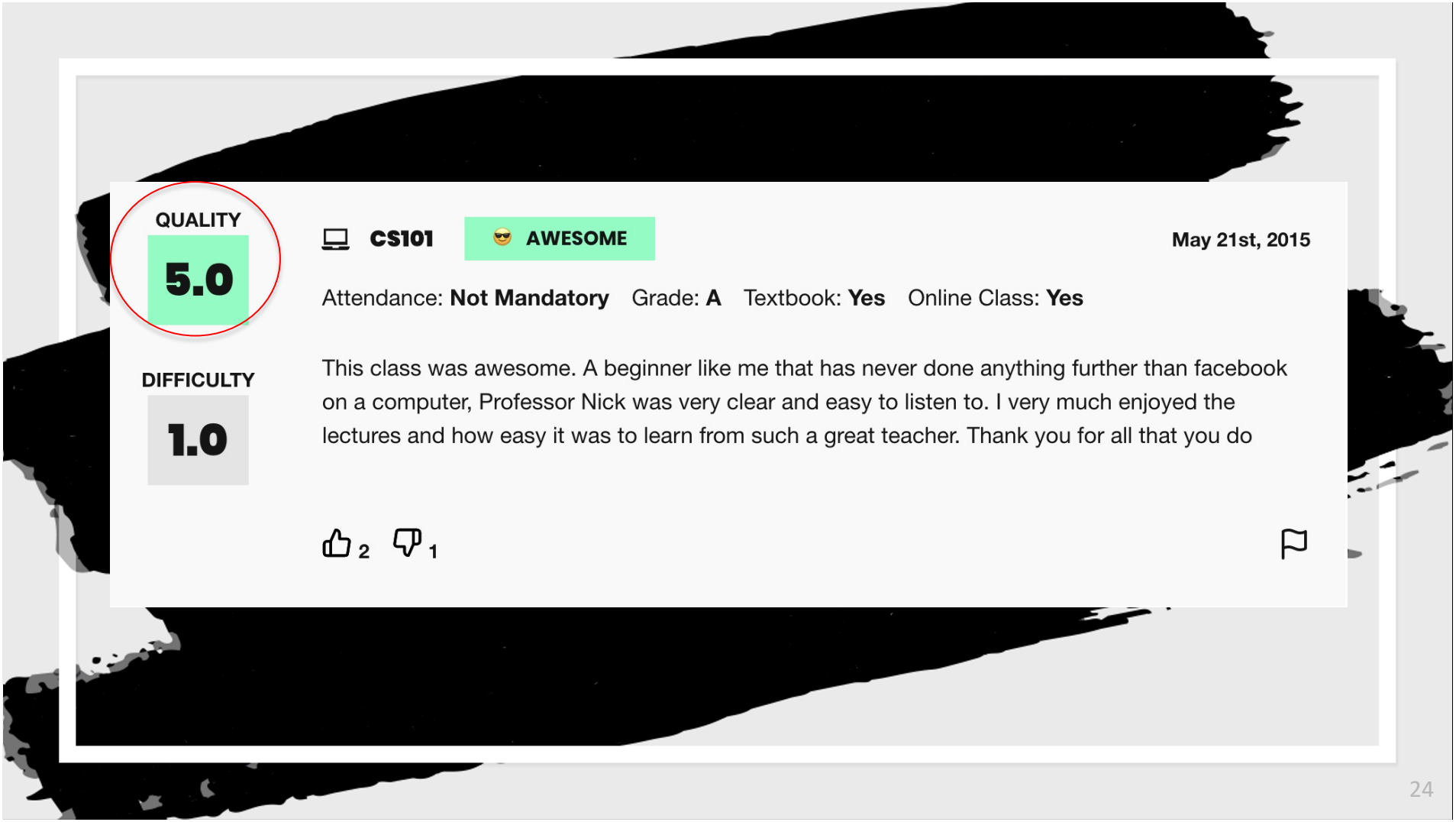
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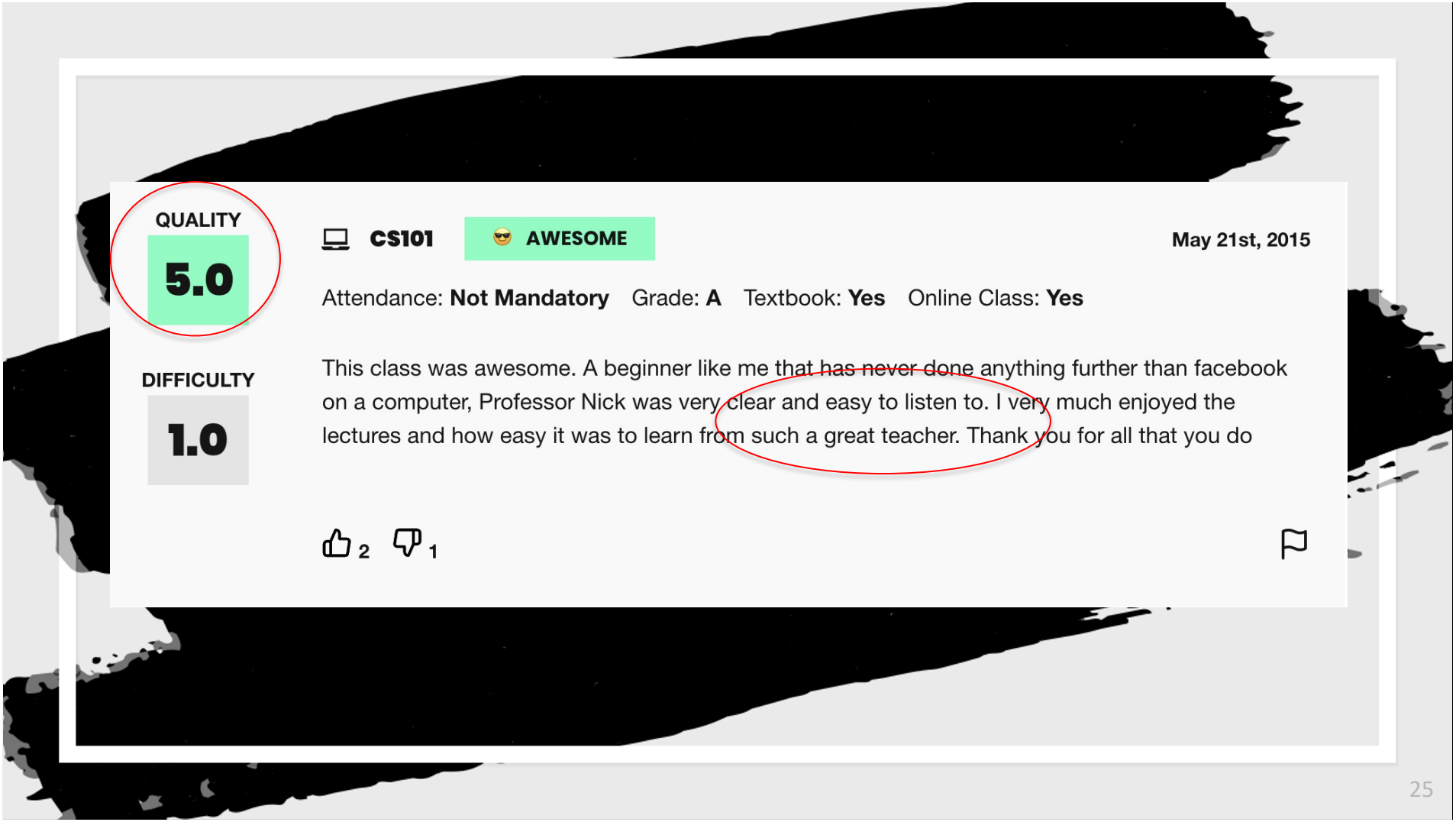
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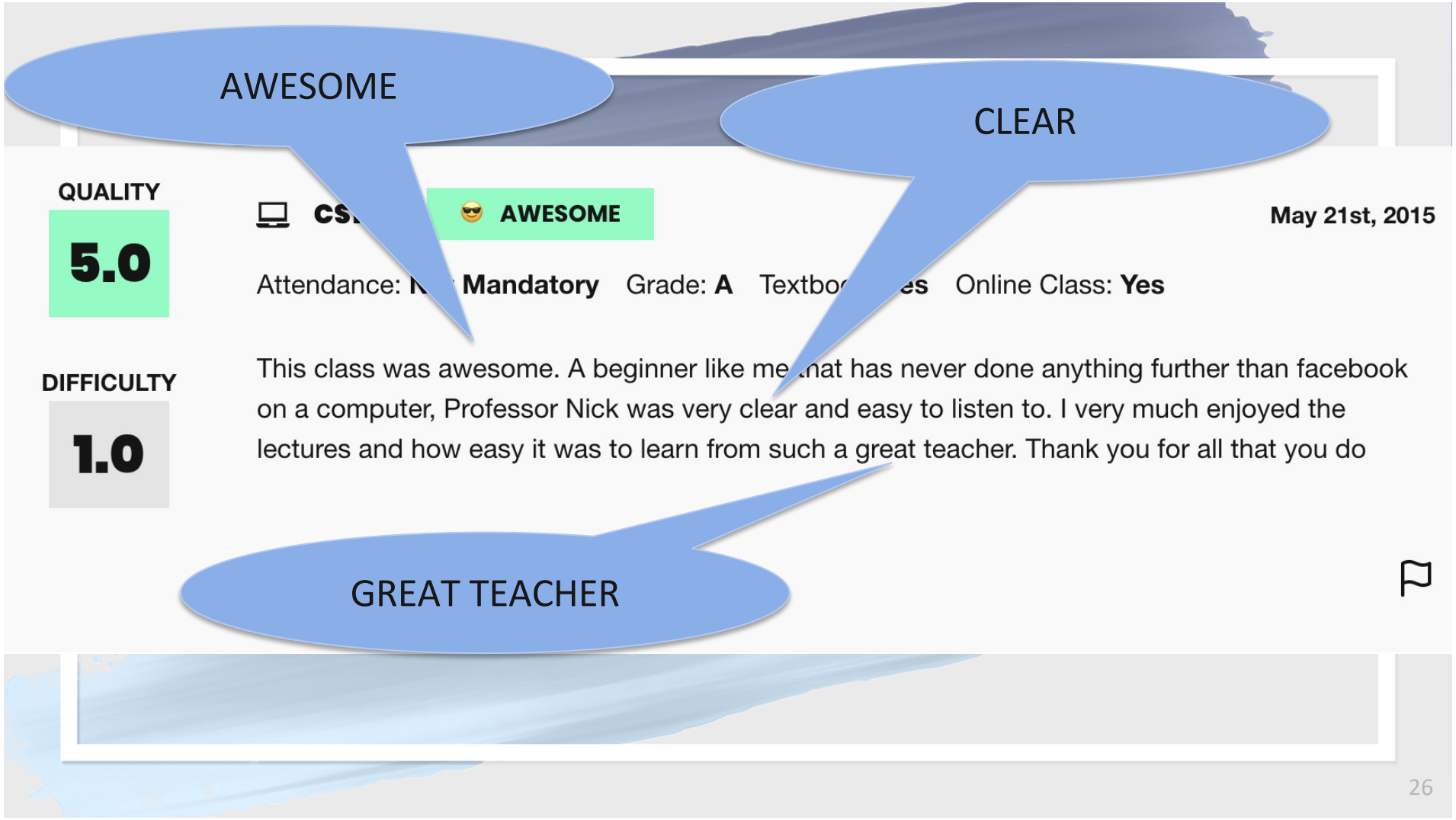
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QUALITY
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GREAT TEACHER

Descriptive vs Normative Language

Descriptive language

- "is"
- "was"
- what people did
- what happened

Normative language

- "right"
- "wrong"
- "good"
- "bad"
- "should"
- "should not"

Descriptive or Normative?

QUALITY

5.0

DIFFICULTY

1.0

CS101 😎 **AWESOME** May 21st, 2015

Attendance: **Not Mandatory** Grade: **A**

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CLEAR

GREAT TEACHER


Descriptive
Normative

Thick Normative Terms

"Thick" normative terms are both descriptive AND normative

Examples:

- Cowardly :: Cautious
- Polite :: (?)
- Rude :: (?)
- Chill :: (?)
- Kind :: (?)
- etc

Thick Normative Terms & Fairness

- We compare people in many ways, not just numerically
- Thick normative terms express “loaded” judgments

Descriptive or Normative?

Mark Zuckerberg on whether Facebook would fact-check false claims about election suppression:

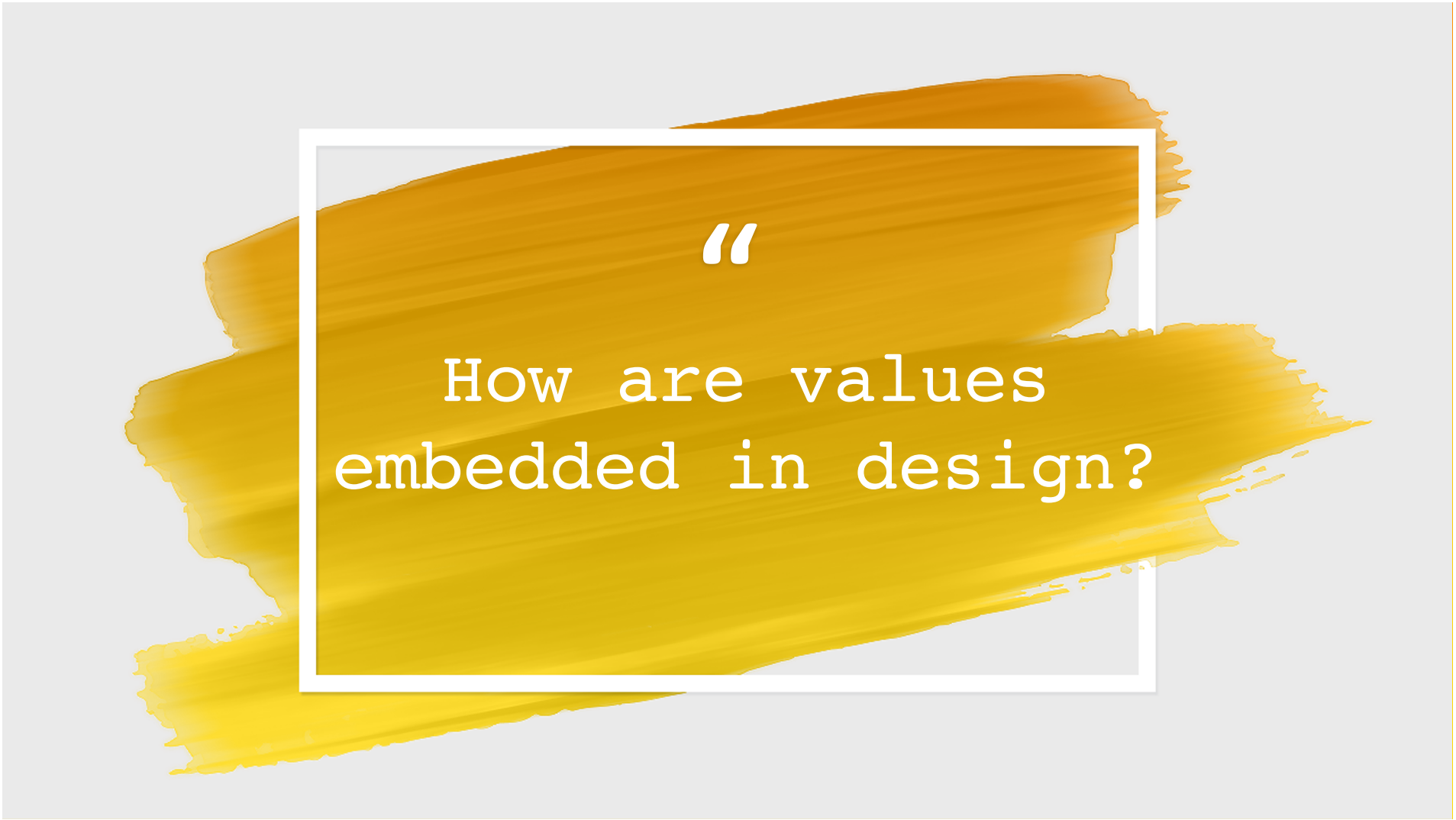
1. “We have a different policy, I think, than Twitter on this.”
2. “You know, I just believe strongly that Facebook shouldn’t be the arbiter of truth of everything that people say online.”
3. “I think in general private companies probably shouldn’t be—or, especially these platform companies—shouldn’t be in the position of doing that.

Descriptive or Normative?

Not surprising that statements setting the policy for platforms would be normative.

What about the programs behind the platforms themselves?

Do programs like the ones you are writing contain normative claims or values?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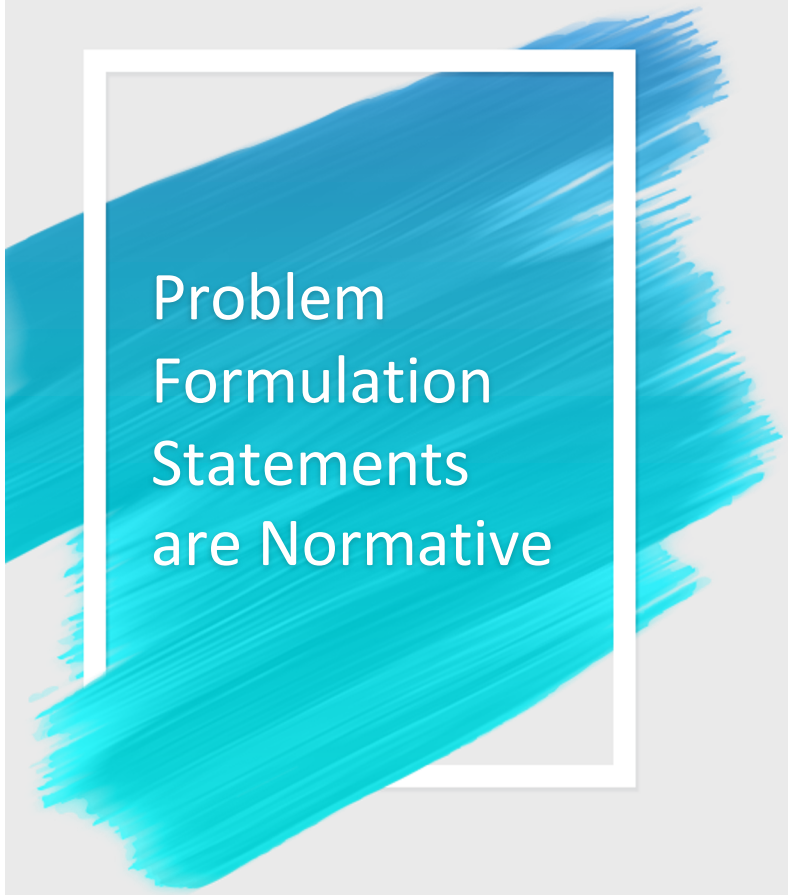
How are values
embedded in design?

1. Problem Formulation Embeds Values

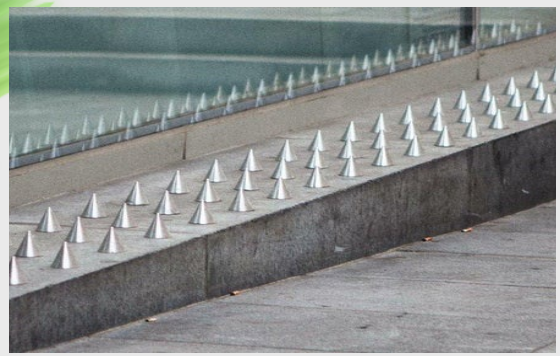
Formulating a problem means describing the desired solution as good or worthy of being done.



- Formulating a problem means describing the desired solution as good or worthy of being done.
- What is the problem to be solved?
- For whom is this a problem? Who would benefit from its solution?
- Who can agree that this is a problem worth solving?

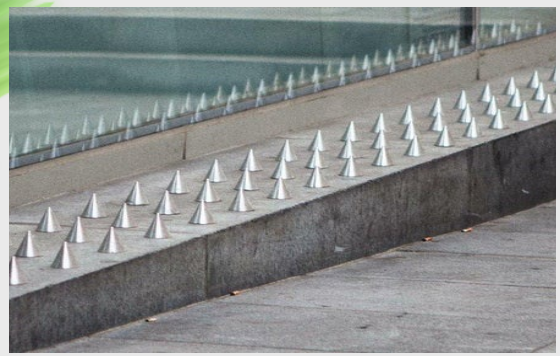
What is the Problem to be Solved?

"Homeless people are sleeping here and we (who is we?) want them to stop"



What is the Problem to be Solved?

"Homeless people are sleeping here and we (who is we?) want them to stop"



"Some people in our community don't have a place to sleep and we (who is we?) think they should"

1. Problem Formulation Embeds Values

Formulating a Ratings Problem

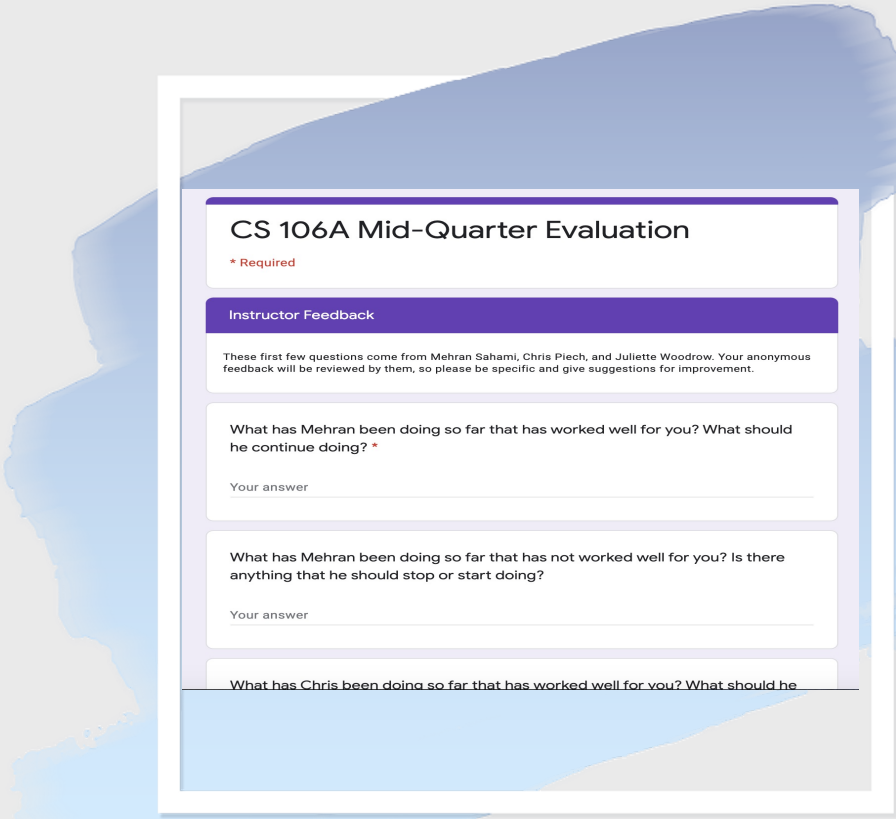
- What are the problem(s) to be solved?
- For whom are these problems?
- Who would benefit from their solution(s)?
- For each problem, who can agree that the problem is worth solving?

Formulating a Search Problem

- What are the problem(s) to be solved?
- For whom are these problems? Who would benefit from their solution(s)?
- For each problem, who can agree that the problem is worth solving?

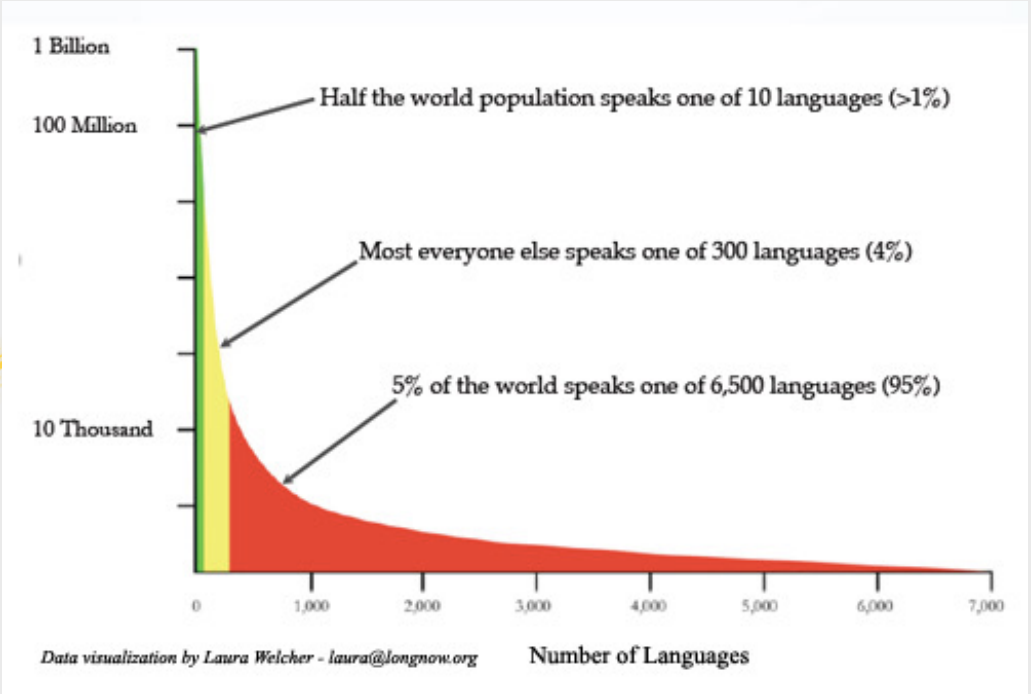
2. Choice of Data Embeds Values

- Surveys are cheap to run
- They measure opinions
- What are other ways to measure quality of professors?



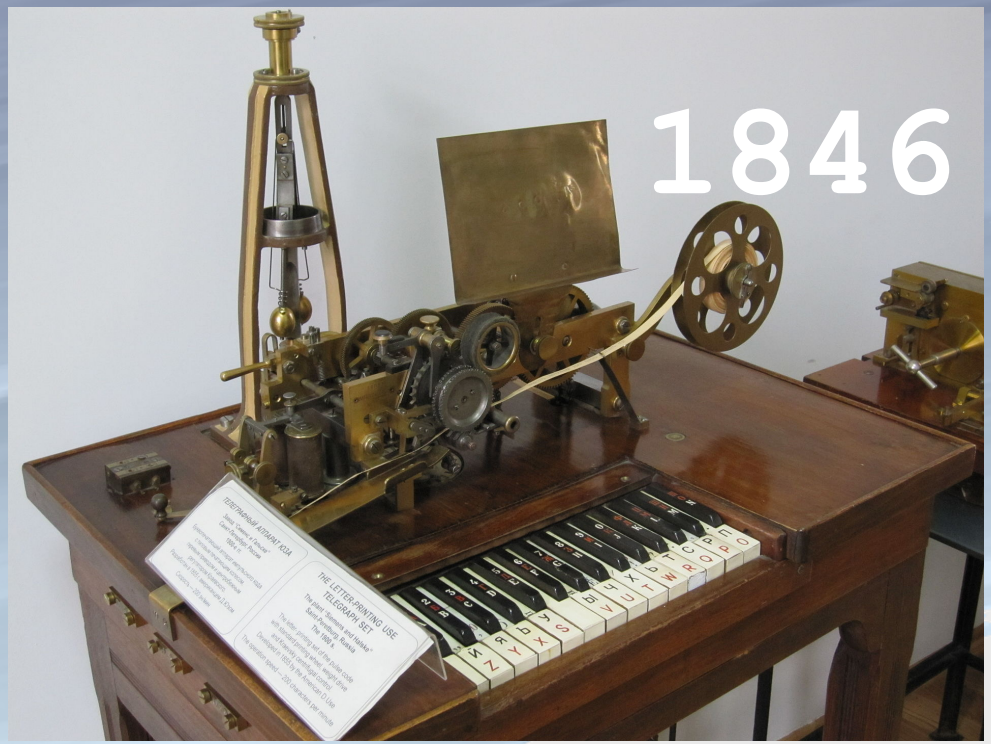
Representation, Language, and Data

Linguistic Representation and the Long Tail




“
A Very Very Brief
History of Symbol Representation
in Communications Technology …

Telegraph Typewheel, Covers 56 Characters



4 Digit Character-to-Code Mapping for the Telegraph

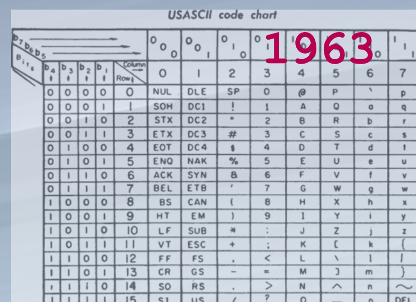
”American Standard Code for Information Interchange”, 256 characters

USASCII code chart

Bits b_7 b_6 b_5 →	0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
b_4 b_3 b_2 b_1 ↓ Row ↓ Column →	0	1	2	3	4	5	6	7
0 0 0 0	0	NUL	DLE	SP	0	@	P	`	p
0 0 0 1	1	SOH	DC1	!	1	A	Q	a	q
0 0 1 0	2	STX	DC2	"	2	B	R	b	r
0 0 1 1	3	ETX	DC3	#	3	C	S	c	s
0 1 0 0	4	EOT	DC4	$	4	D	T	d	t
0 1 0 1	5	ENQ	NAK	%	5	E	U	e	u
0 1 1 0	6	ACK	SYN	&	6	F	V	f	v
0 1 1 1	7	BEL	ETB	'	7	G	W	g	w
1 0 0 0	8	BS	CAN	(	8	H	X	h	x
1 0 0 1	9	HT	EM	)	9	I	Y	i	y
1 0 1 0	10	LF	SUB	*	:	J	Z	j	z
1 0 1 1	11	VT	ESC	+	;	K	[	k	{
1 1 0 0	12	FF	FS	,	<	L	\	l	|
1 1 0 1	13	CR	GS	-	=	M	]	m	}
1 1 1 0	14	SO	RS	.	>	N	^	n	~
1 1 1 1	15	SI	US	/	?	O	_	o	DEL

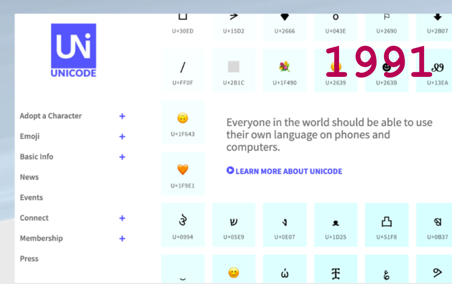
1963

History of Symbol Representation

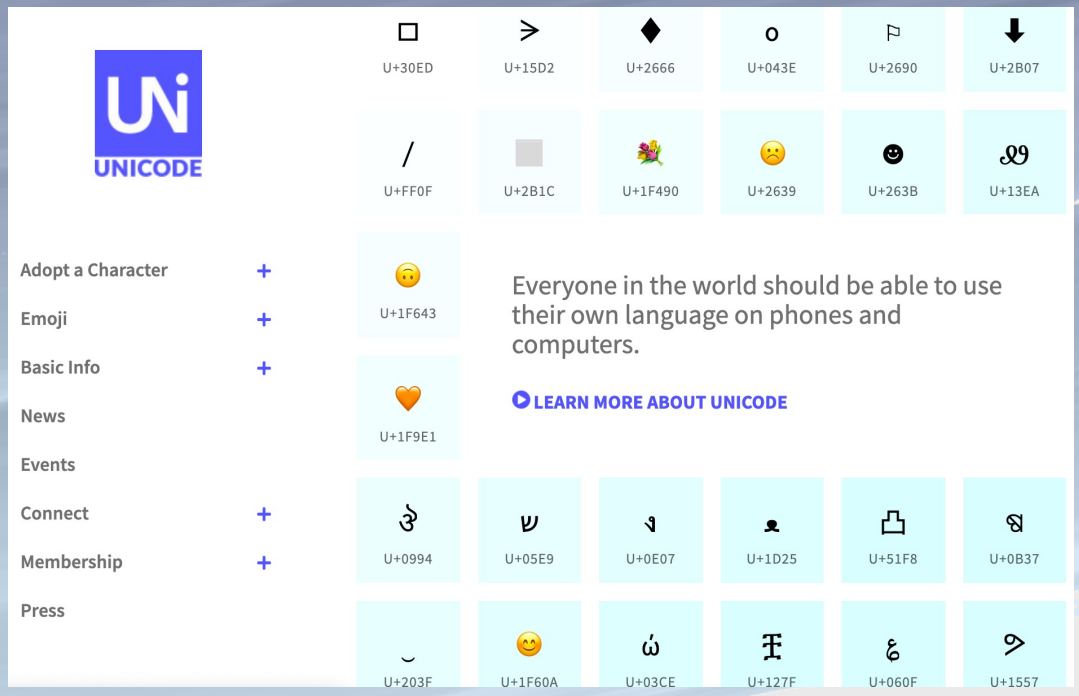


USASCII code chart

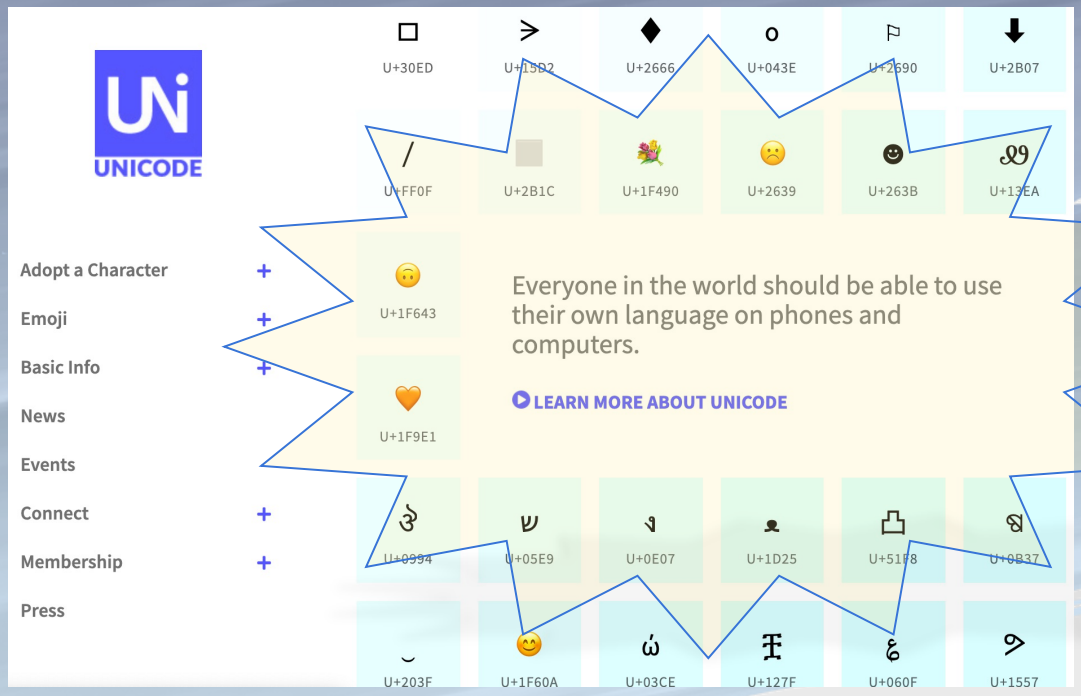
b4	b3	b2	b1	Row \ Column	0 (000)	1 (001)	2 (010)	3 (011)	4 (100)	5 (101)	6 (110)	7 (111)
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	|
1	1	0	1	13	CR	GS	-	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	_	o	DEL



Unicode!


UNICODE
Adopt a Character
Emoji
Basic Info
News
Events
Connect
Membership
Press
U+30ED
U+15D2
U+2666
U+043E
U+2690
U+2B07
U+FF0F
U+2B1C
U+1F490
U+2639
U+263B
U+13EA
U+1F643
U+1F9E1
Everyone in the world should be able to use their own language on phones and computers.
LEARN MORE ABOUT UNICODE
U+0994
U+05E9
U+0E07
U+1D25
U+51F8
U+0B37
U+203F
U+1F60A
U+03CE
U+127F
U+060F
U+1557

Unicode!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U+30ED
U+15D2
U+2666
U+043E
U+2690
U+2B07
U+FF0F
U+2B1C
U+1F490
U+2639
U+263B
U+13EA
U+1F643
U+1F9E1
Everyone in the world should be able to use their own language on phones and computers.
LEARN MORE ABOUT UNICODE
U+0994
U+05E9
U+0E07
U+1D25
U+51F8
U+0B37
U+203F
U+1F60A
U+03CE
U+127F
U+060F
U+1557

Unicode: 1 Million Symbols

Full Coverage for 90 Languages

Basic Coverage for 200 Languages

UNICODE: SUCCESSFUL PROCESS FOR IMPROVEMENT

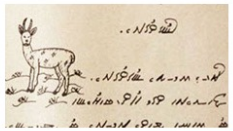
WELCOME TO THE SCRIPT ENCODING INITIATIVE

The Script Encoding Initiative (SEI), established in the UC Berkeley Department of Linguistics in April 2002, is a project devoted to the preparation of formal proposals for the encoding of scripts and script elements not yet currently supported in Unicode (ISO/IEC 10646).

Unicode is the universal computing standard specifying the representation of text in all modern software. To date, Unicode has largely focused on the major modern scripts, particularly those scripts most widely used in business. Some minority and historic scripts have already been encoded, as well as historic characters of the major modern scripts.

Over 100 scripts remain to be encoded. Minority scripts are still used in parts of South and Southeast Asia, Africa, and the Middle East. Unencoded scripts include Kpelle and Loma. Scripts of historical significance include Book Pahlavi, Large Khitan, and Jurchen. Even for major modern scripts there are many difficult historical issues remaining to be addressed: for example, the

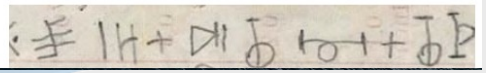
The goal of the SEI project is to fund the preparation of script proposals that will be successfully approved by the Unicode Technical Committee and WG2 (ISO/IEC 10646) without requiring extensive revision or involvement of the committee itself.

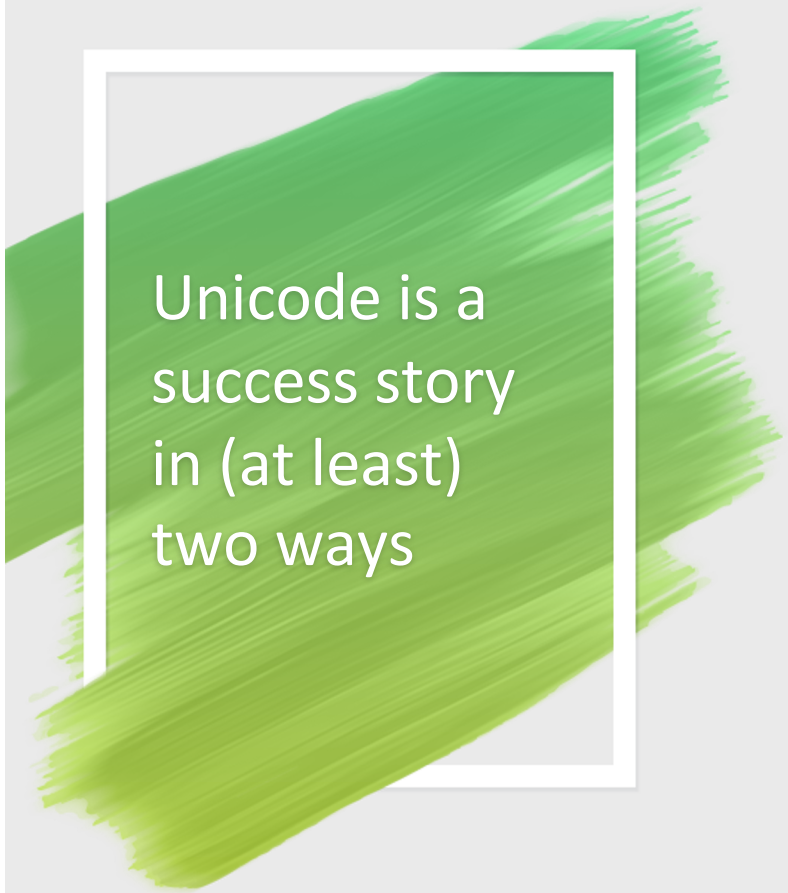


A secondary goal to encourage the creation of freely-available Unicode-conformant fonts. This will help to promote widespread adoption and implementation of the scripts.

By providing funding for proposal authors, drawn from faculty and graduate students as well as other experts, the Script Encoding Initiative represents a concerted effort to tackle the remaining scripts and remaining script issues. The project will be assisted by a Unicode Vice President to assure that the proposals meet requirements of the Unicode Technical Committee and of the international standards community. To date, the project has helped get over 70 scripts encoded.

The Script Encoding Initiative project is of world-wide importance, for minority and historic scripts. For a minority language, having its script included in the universal character set will help to promote native-language education, universal literacy, cultural preservation, and remove the linguistic barriers to participation in the technological advancements of computing. For historic scripts, it will serve to make communication easier, opening up the possibilities of online education, research, and publication.





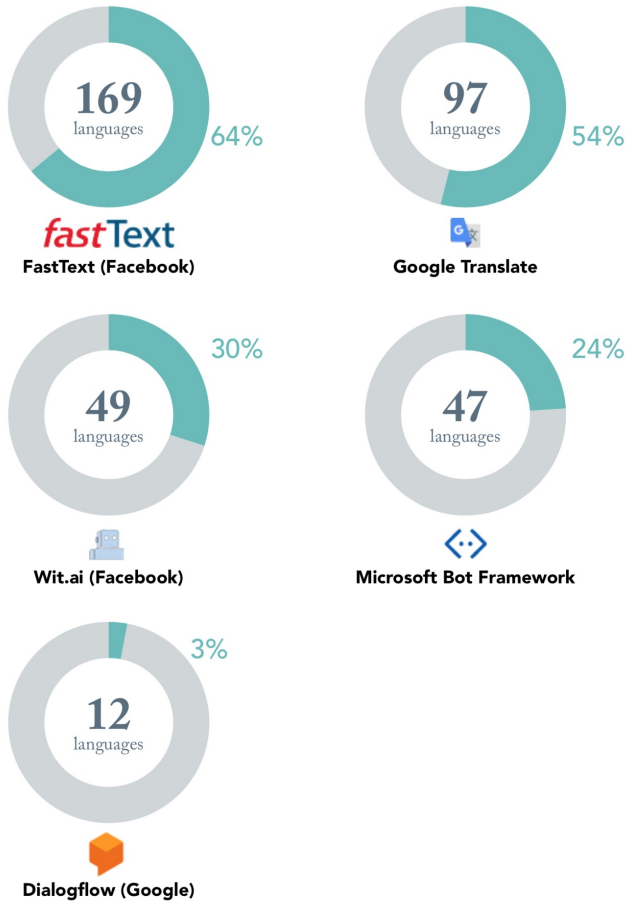
Inclusive and Representative

Covers languages spoken by at least 95% of people in the world.

Successful Process for Improvement

Unicode has an open-source process by which scholars and speakers of small languages can propose additional scripts.

Compare successes of Unicode with web-based NLP, text and translation services, which work best for well-resourced languages and people

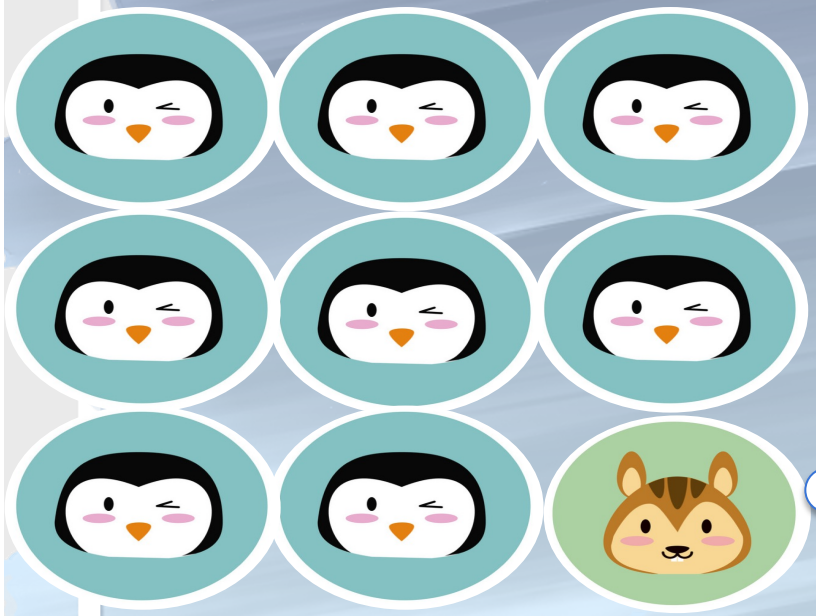


Percentage of those living on less than $1.50/day whose language is covered by the tool

SOURCE: World Bank, Ethnologue and software provider websites

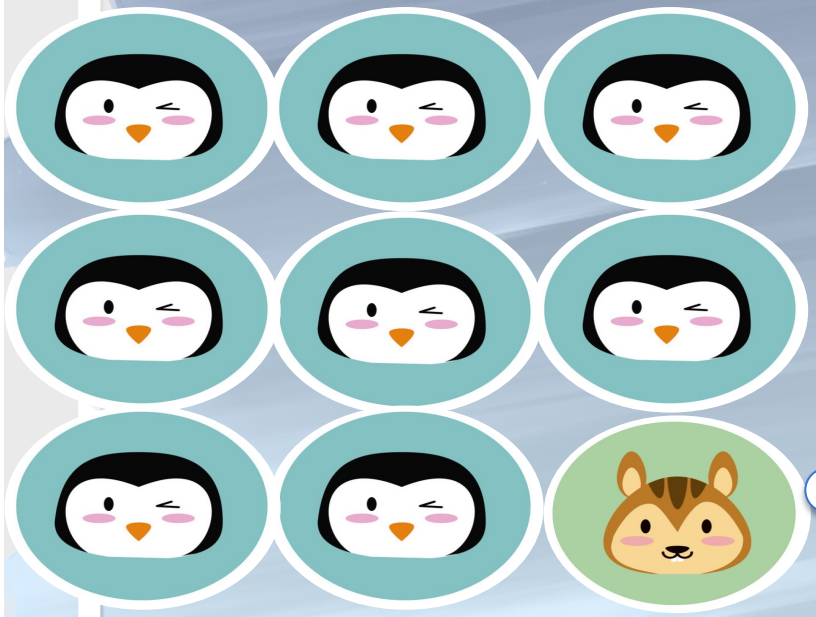
Representation, Surveys, and Long Tails in Data

Representation, Surveys, and Long Tails in Data



If I had a different experience, my numerical ratings may not affect the survey data – but they matter!

Representation, Surveys, and Long Tails in Data

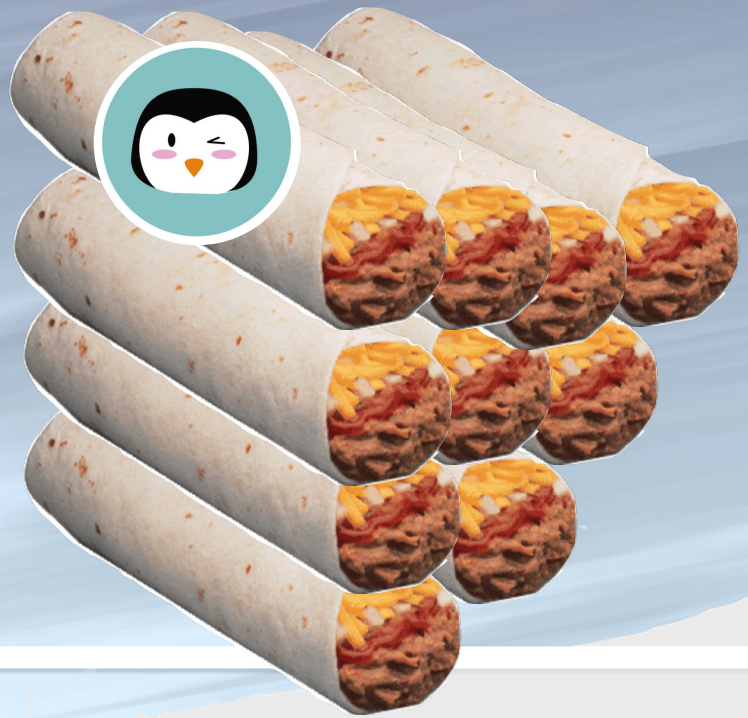


I want to see myself represented in search results, but other people are using different terms to describe me!

What kind of harm is lack of representation?

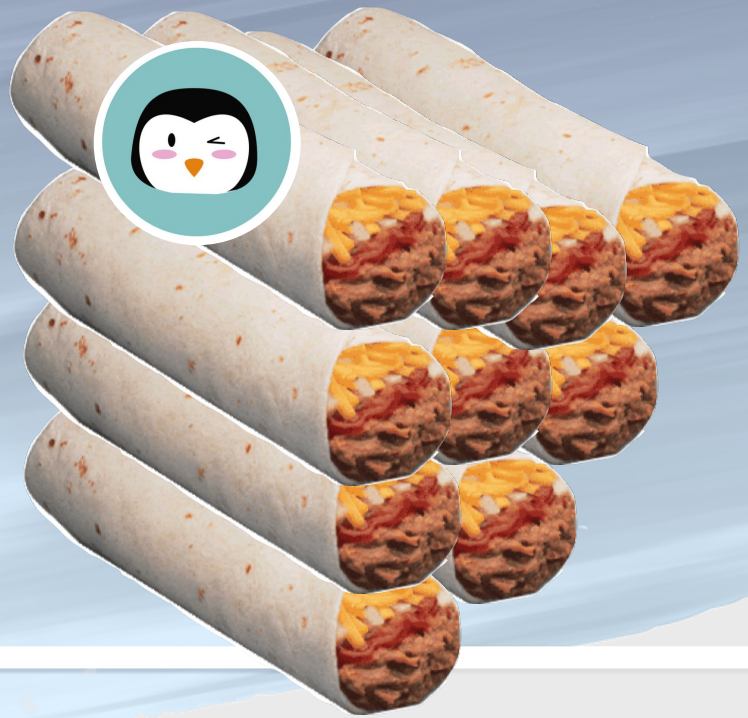
Distributive Harm:

How should things or outcomes be distributed?



Equality of Opportunity:

Everyone has the Same Access to Pursue the Good.



Equality of Outcome:

Everyone gets the same good things
(and the same responsibilities)

Representational Harms

- Am I represented in this system?
- Can I express myself in it?
- Does this system represent me, my culture, and my self-expression?

Thank you!

You can always get in touch at kcreel@stanford.edu

Or plan a visit to my office hours at

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