

THE
LANGUAGE
OF
FOOD

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America's national foods

Hamburger



ketchup



Frankfurter



French fries



Europe



But what about ketchup?



Fish preservation 2000 years ago

- Mon-Khmer, Tai-Kadai, Hmong-Mien speakers in Southeast China/ Southeast Asia

Preserving fish to last through dry season

- Fish, rice, salt, lactic acid fermentation





200 BCE: China expands

Han Dynasty: Emperor Wu invades tribal Guangdong and Fujian.

- Assimilating locals and their fermented seafoods
- Pushing the rest south

Innovations in Japan

700 CE: fermented fish rice → Japan called *sushi* (technically *narezushi*)

18th century: Use vinegar instead of lactic fermentation (and eat the rice)

19th century: eat the fish fresh

Meanwhile...

Southern Chinese sail/emigrate to SE Asia

Propagating fish sauces and fish products.

Also red rice wine and
wine lees pastes 红糟



The fish/soy fermentation isogloss!

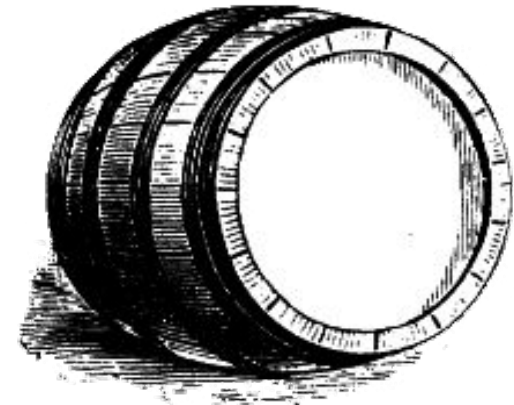


The Age of European Exploration

1600: British and Dutch sail to Asia for spices, textiles, porcelain

The sailors drink

beer and wine



But both go sour in the tropical heat

(no hops yet)



They arrive in Indonesia to find ethnic Chinese making:

Arrack

The ancestor of rum

Distilled palm wine & **red rice**
(from Arabic word for 'sweat')

1609: British start buying arrack

1704: The “common drink” of
Europeans in Asia

Sailors add limes (for scurvy) to make
“punch”, first cocktail



While buying arrack, the British
picked up barrels of:

Fish sauce

Vietnamese *nuoc mam* or Thai *nam pla*

What was this fish sauce called in the
Zhangzhou dialect of Southern Min?

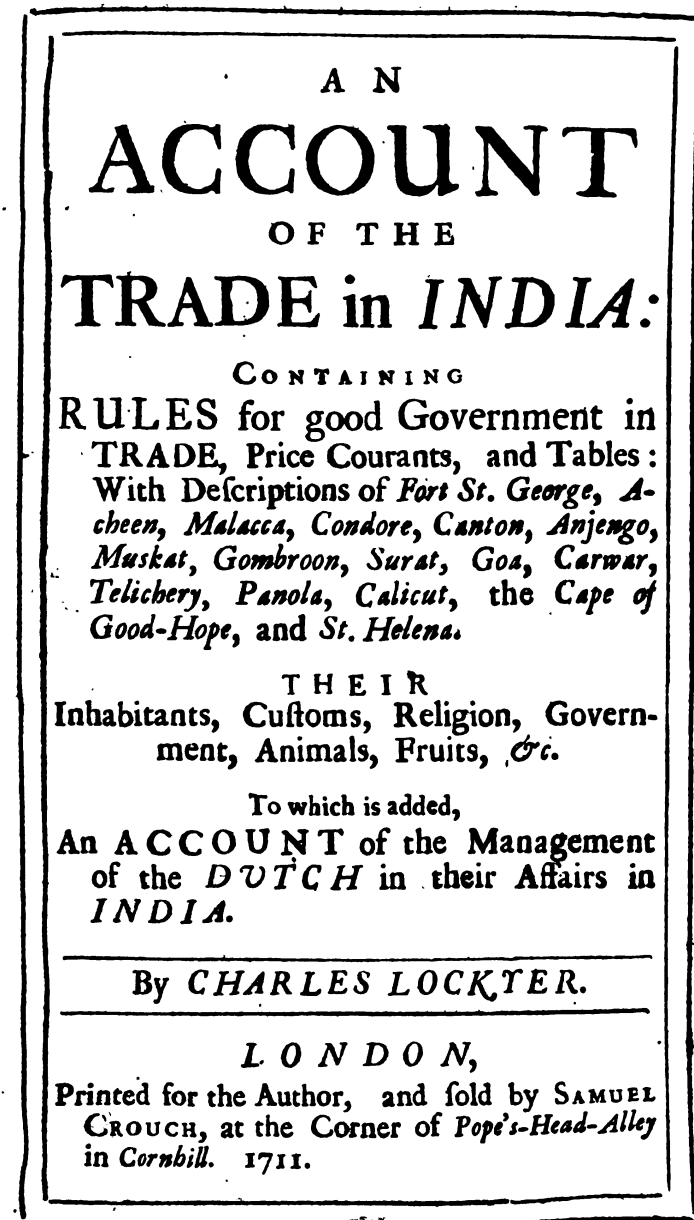
“Ketchup”

ke = 鮓 salted fish **chiap** = 汁 “sauce”

The British bring it home.

Charles Lockyer's 1703 trip to Asia

British trader in Asia
Ketchup (fish sauce)
now an important
commodity



Soy comes in Tubs from *Jappan*, and the best *Ketchup* from *Tonqueen*; yet good of both sorts, are made and sold very cheap in *China*.

I know not a more profitable Commodity.

Fish sauce transforms

What to do when you have an expensive imported luxury?

Create fakes!



Expensive imported ketchup

To Make KATCH-UP that will keep good Twenty Years.

Take a Gallon of strong stale Beer, one Pound of Anchovies wash'd and clean'd from the Guts, half an Ounce of Mace, half an Ounce of Cloves, a quarter of an Ounce of Pepper, three large Races of Ginger, one Pound of Eschallots, and one Quart of flap Mushrooms ...boil ... strain bottle and stop it very close...This is thought to exceed what is brought from *India*... 1742



Innovations: Jane Austen's family
recipe for walnut ketchup, 1800

Take green **walnuts** ...**vinegar** with a
handful of **salt**. ... boil**cloves, mace,**
sliced **ginger**, sliced **nutmeg**, Jamaica
peppercorns, little **horse radish** with a few
shallots. ... bottle it up ...

Innovations: tomatoes! 1817

Tomata Catsup

Gather a gallon of fine, red, and full ripe tomatas; mash them with one pound of salt; ...add **a quarter of a pound of anchovies**, two ounces of shallots, and an ounce of ground black pepper; boil ... strainmace... allspice and ginger.... nutmeg, coriander ... will keep for seven years

Sugar!

1850: anchovies disappear

1870: especially in the US, lots of sugar added



Hidden in the name of our national sauce: A history of innovation!



- Tai tribal fermented fish and rice
- Japanese sushi
- Vietnamese fish sauce
- Anchovy, mushroom, walnut ketchups
- Modern sweet tomato ketchup

Recipes are just a technology



The ketchup theory of innovation

Innovation happens at interstices, as we borrow and extend the ideas of our neighbors

Other stories of early borrowed innovation reflected in food words

How ice cream came from military technology!

- How Chinese gunpowder and Syrian chemists led to the Italian invention of ice cream and the word “*sherbet*”)





How about innovations in science?

Most historical accounts of scientific change:

Internal revolution from one paradigm to another

But what about external influences?

Is there a similar role for borrowing from the neighbors?

From recipes to ideas: Using computational linguistics to study the flow of ideas in science



Ashton Anderson



Dan McFarland



David Hall



Will Hamilton



Raine Hoover



David Jurgens



Minkyung Kim



Jure Leskovec



Chris Manning



Vinod Prabhakaran



The history of one field: computational linguistics

ACL Anthology Corpus

20,000 papers

15,000 authors

100,000 citations

Most papers in Computational Linguistics

Topic models for measuring language

Topics

gene 0.04
dna 0.02
genetic 0.01
...

life 0.02
evolve 0.01
organism 0.01
...

brain 0.04
neuron 0.02
nerve 0.01
...

data 0.02
number 0.02
computer 0.01
...

Documents

Seeking Life's Bare (Genetic) Necessities

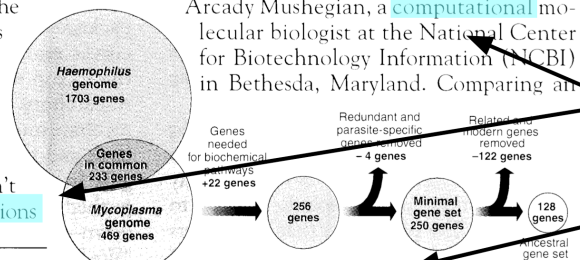
COLD SPRING HARBOR, NEW YORK— How many genes does an organism need to survive? Last week at the genome meeting here,* two genome researchers with radically different approaches presented complementary views of the basic genes needed for life. One research team, using computer analyses to compare known genomes, concluded that today's organisms can be sustained with just 250 genes, and that the earliest life forms required a mere 128 genes. The other researcher mapped genes in a simple parasite and estimated that for this organism, 800 genes are plenty to do the job—but that anything short of 100 wouldn't be enough.

Although the numbers don't match precisely, those predictions

* Genome Mapping and Sequencing, Cold Spring Harbor, New York, May 8 to 12.

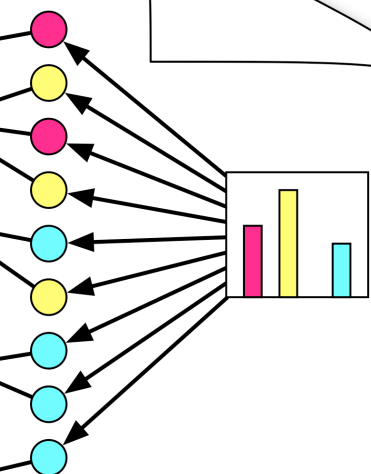
SCIENCE • VOL. 272 • 24 MAY 1996

“are not all that far apart,” especially in comparison to the 75,000 genes in the human genome, notes Siv Andersson of Uppsala University in Sweden, who arrived at the 800 number. But coming up with a consensus answer may be more than just a genetic numbers game, particularly as more and more genomes are completely mapped and sequenced. “It may be a way of organizing any newly sequenced genome,” explains Arcady Mushegian, a computational molecular biologist at the National Center for Biotechnology Information (NCBI) in Bethesda, Maryland. Comparing an



Stripping down. Computer analysis yields an estimate of the minimum modern and ancient genomes.

Topic proportions and assignments



Topic models and other text processing for history of science

T.L. Griffiths and M. Steyvers. 2004. Finding scientific topics. PNAS 101 (S1):5228.

Paul, M and R. Girju. 2009. Topic Modeling of Research Fields: An Interdisciplinary Perspective. Proceedings of RANLP.

S. Gerrish and D.M. Blei. 2010. A language-based approach to measuring scholarly impact. ICML

C. Au Yeung and A. Jatowt. 2011. Studying how the past is remembered: towards computational history through large scale text mining. ACM CIKM 1231–1240.

Guo, H., S. B. Weingart, & K. Börner (2011). Mixed-Indicators Model for Identifying Emerging Research Areas. *Scientometrics*, 89:421–435.

(1) Induce 73 topics from distribution over words:

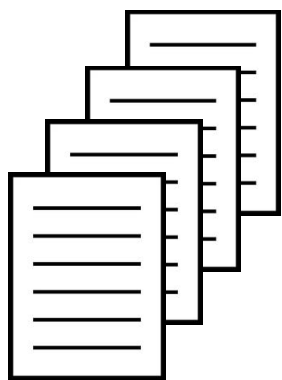
Anaphora resolution: pronoun, anaphora, antecedent, pronouns, coreference, anaphoric...

Parsing: grammar parse chart context-free edge production CFG symbol terminal left items nonterminal...

Probability: probability distribution estimate entropy statistical likelihood parameters smoothing modeling stochastic prior Bayesian..




70 more...

(2) Each CL paper has a distribution over topics:

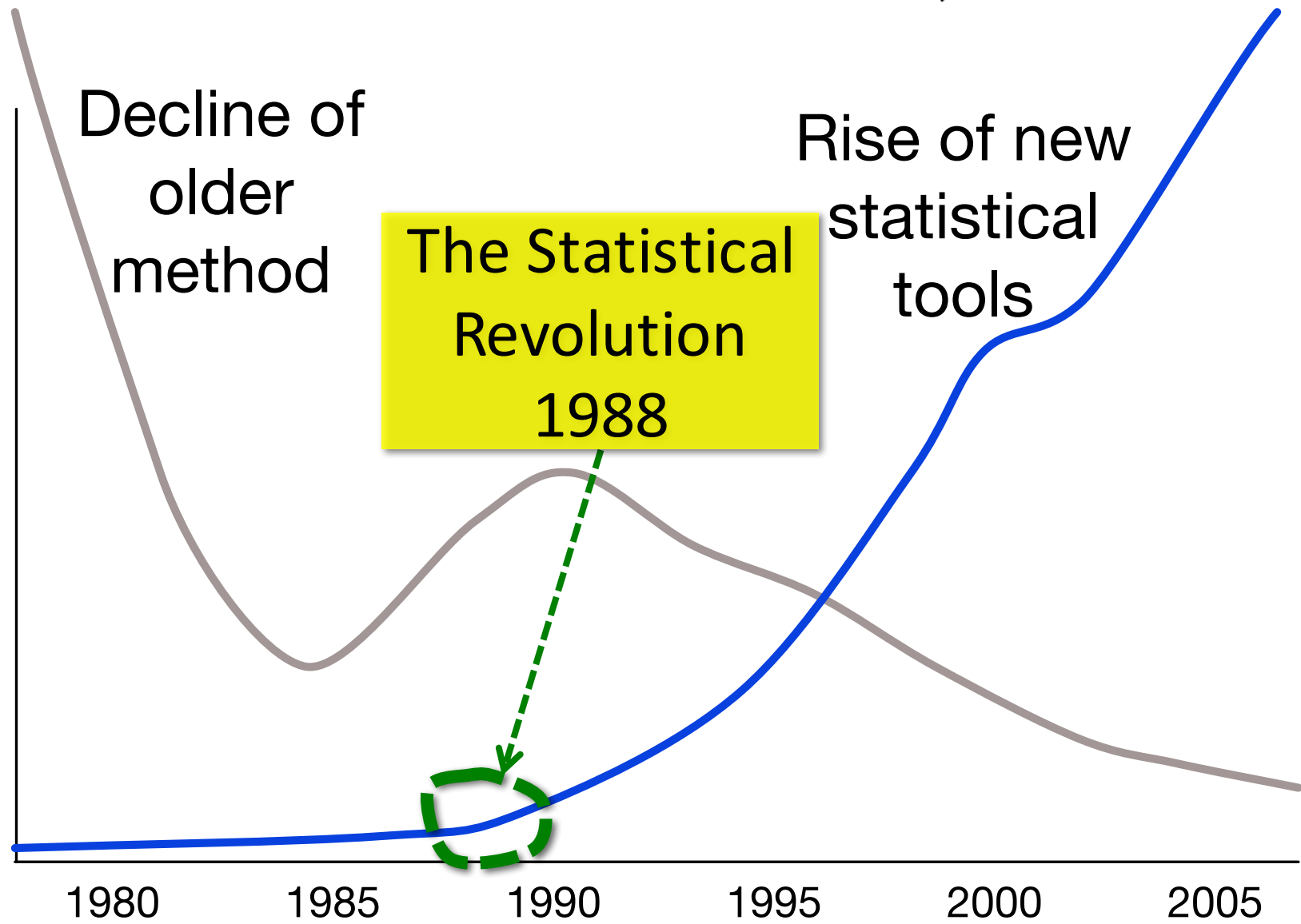


ACL anthology



	Anaphora Topic	Parsing Topic	MT Topic	Tagging Topic	...
	0.12	0.08	0.02	0.01	
	0.03	0.22	0.16	0.00	
	0.01	0.38	0.04	0.01	
⋮					

Topic zeitgeist: $p(\text{topic}=z \mid \text{year}) \propto \sum_{d_i} p(z \mid d_i)$



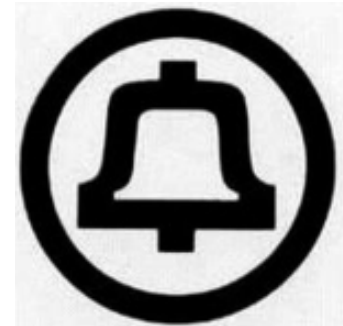


What happened in 1988?

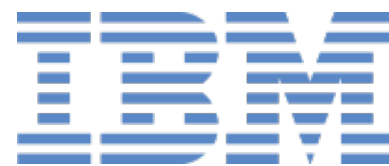
We read all the papers with new statistics

The Origins of Statistical Modeling

Speech
Researchers
with Electrical
Engineering
background!



Kenneth Church, et al.



Peter Brown, Bob Mercer,
Frederick Jelinek,

...

Implication

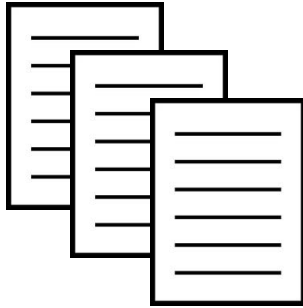
Speech researchers brought these ideas to computational linguistics.

- Computational linguists borrowed these new models
- And started adapting them to new problems

The **ketchup model** of innovation:

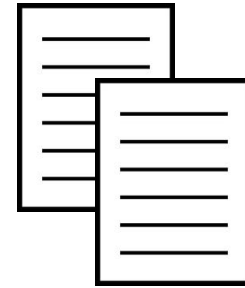
- We borrowed technology from the neighbors
- Interdisciplinarity plays a key role

Topic X



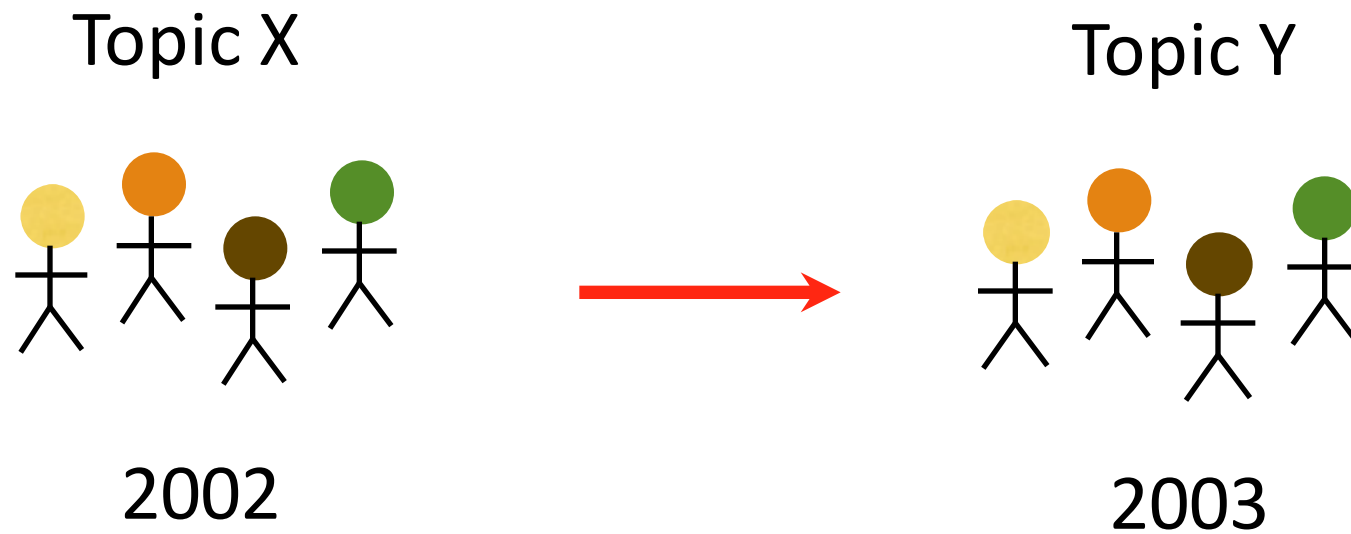
2002

Topic Y



2003

But wait: With topic models alone, no hard evidence of a connection between rise and fall of topics X and Y



But wait: with topic models alone, no hard evidence of a connection between rise and fall of topics X and Y

By tracking the movements of **people over time**, we can better understand the causal story

Studying movement of people across topics

First cluster topics on how people move in and out of them

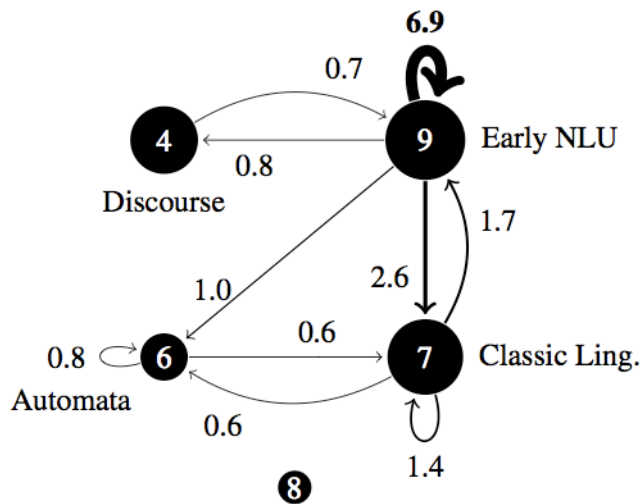
Then study the flow of people between these 9 clusters:

1980-1988 Early Natural Language Understanding
Discourse
Parsing
Finite Automata

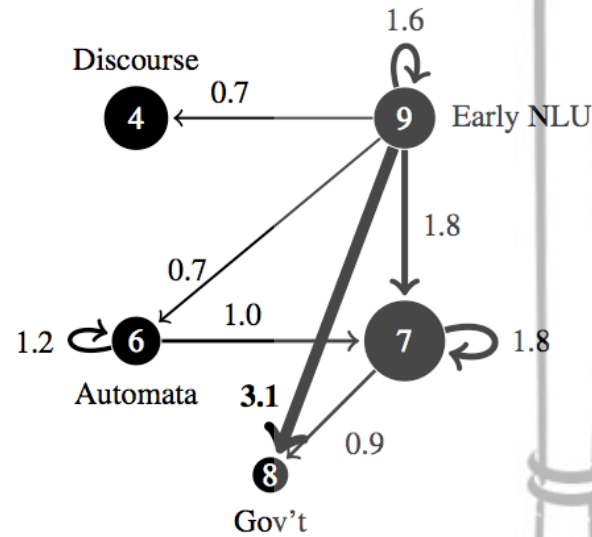
1989-1994 Government Sponsored “Bakeoff” Period
Grantees required to attend these workshops

1995-2008 Early Probability Models
Supervised Learning of Linguistic Classes
Probabilistic Methods
Big Data Computational Linguistics

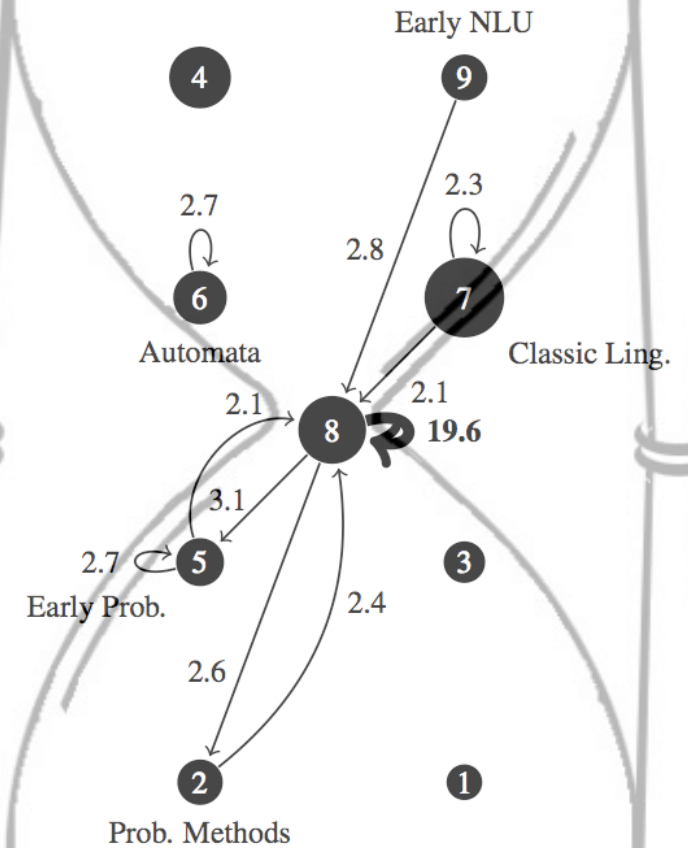
Flow between clusters is the average flow between topics in those clusters



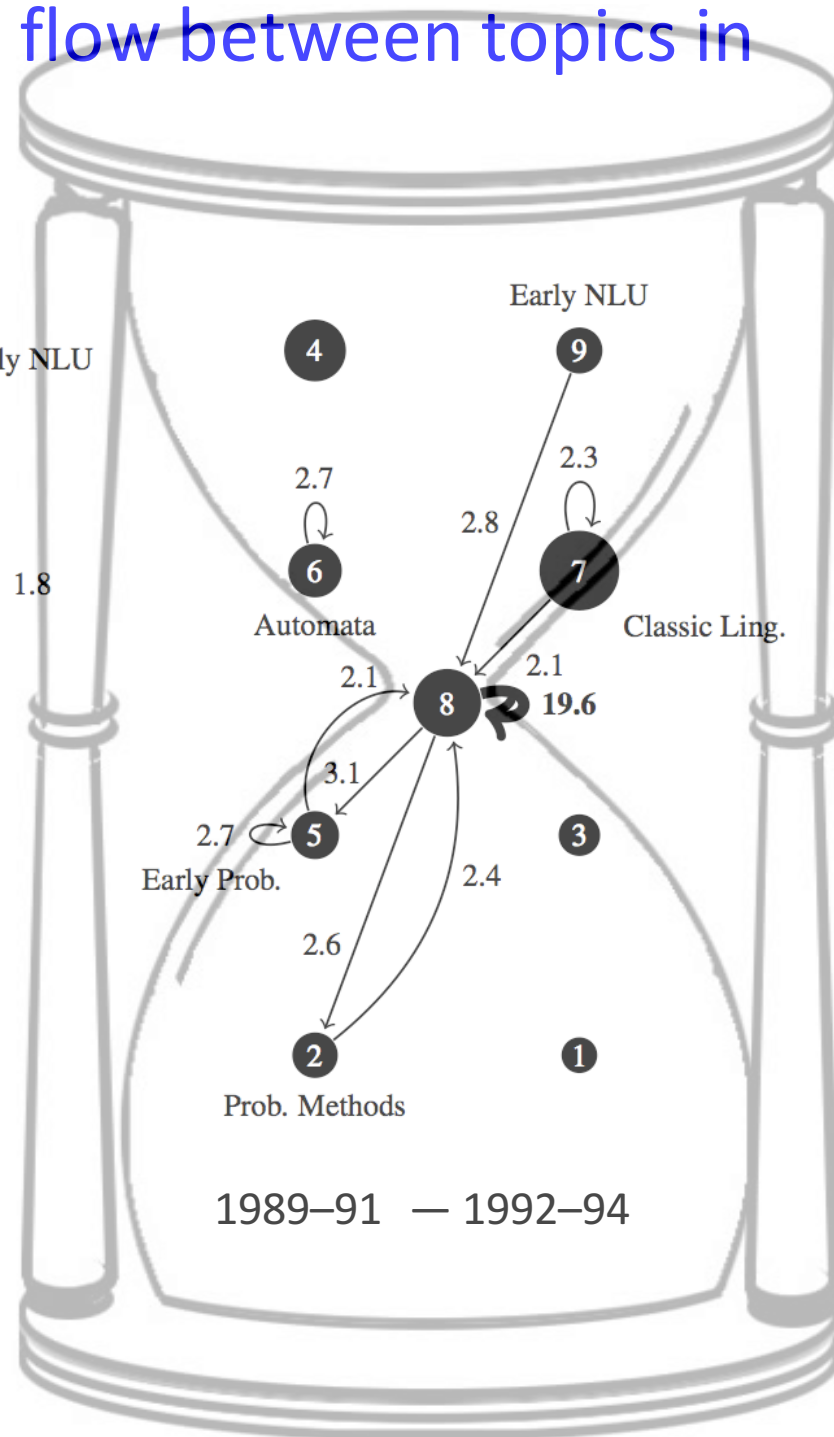
1980-83 — 1984-88

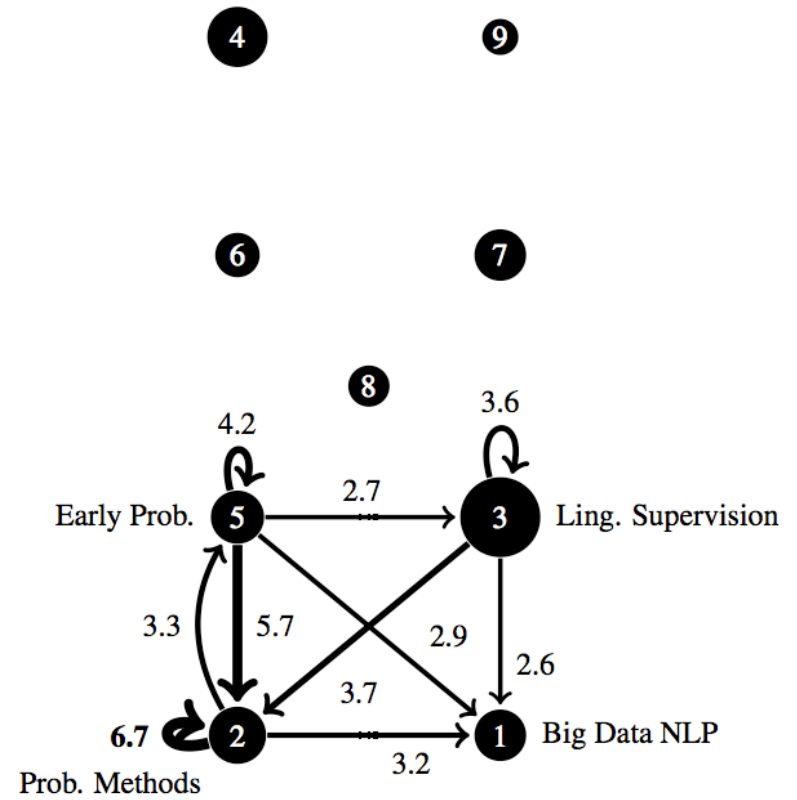
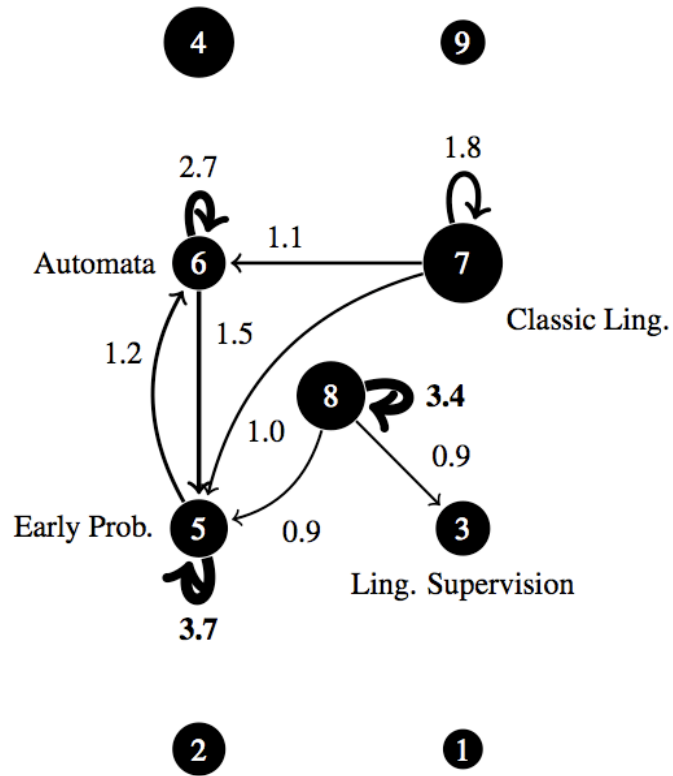


1986-88 — 1989-91



1989-91 — 1992-94





Topic 8: the funnel of the hourglass

US DARPA funding agency “bakeoffs”

Researchers from many fields

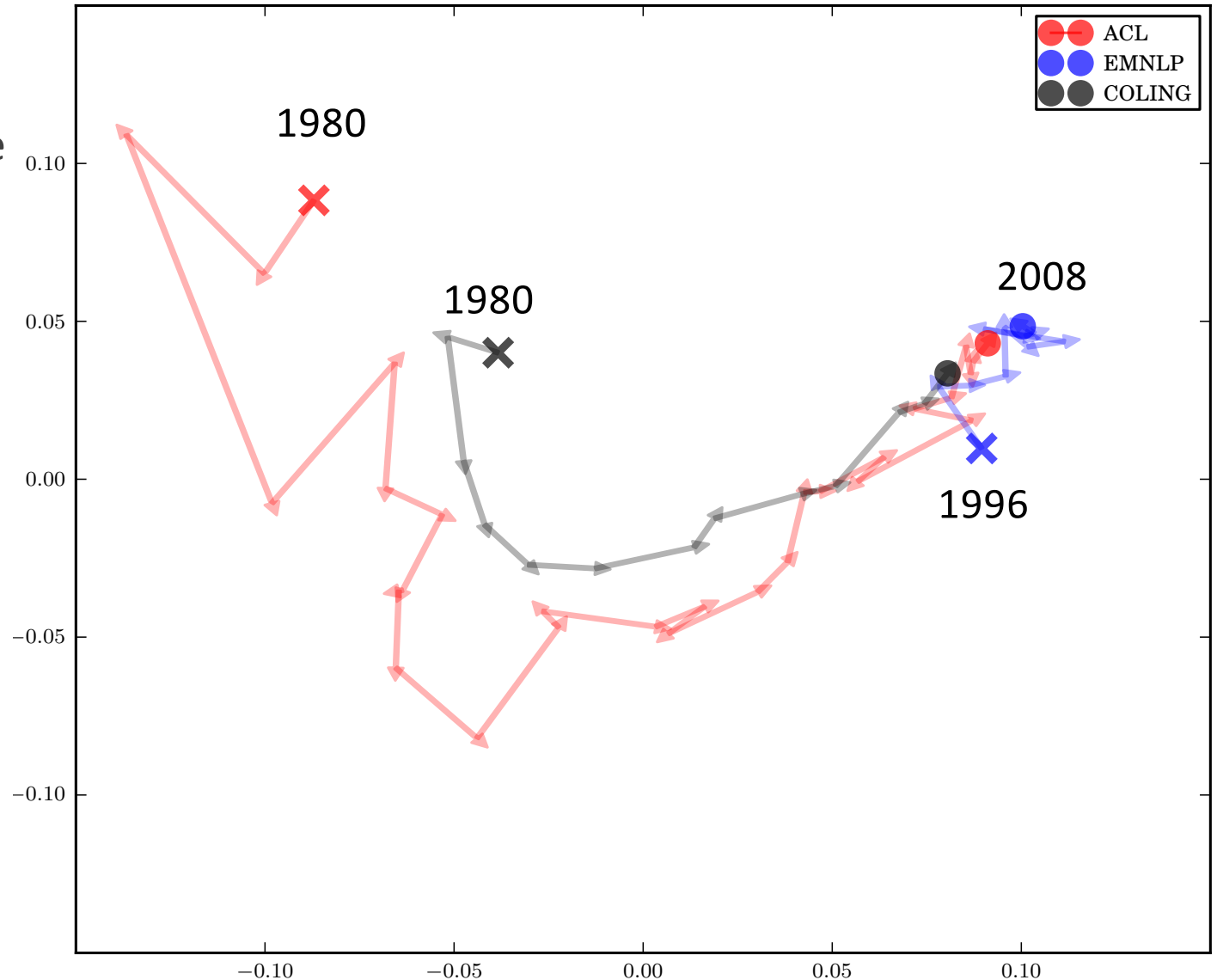
- work on common tasks
- shared evaluations
- show up at to annual workshop and present results
- interdisciplinary participation

Successful innovations were replicated

The field converges: 3 conferences move toward the new empirical

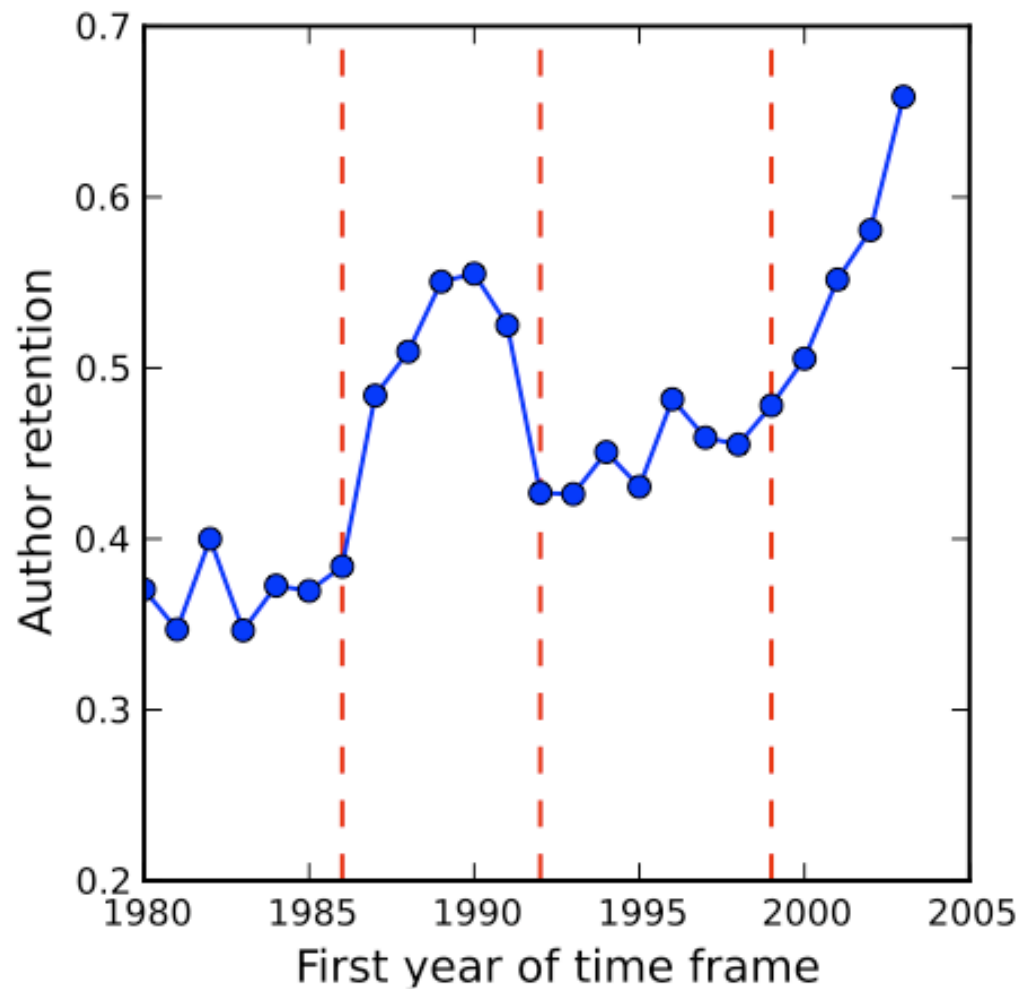
Papers at the main 3 conferences over time, showing their language projected onto 2 dimensions.

Blue is the new statistical conference



The field converges: continued authorship

Overlap between authors in neighboring time windows



Pollination

Of the prolific authors who first published in the database in 1989, 50% were from speech recognition.

Most left (returned to EE).

Government-sponsored period led to a large influx of speech recognition researchers

The people returned, but these new ideas stayed.

A new model of spread of innovation

- **“Pollination” rather than “Colonization”**




Summary

Use language to locate a field-redefining innovation

- Trace the flow of people to find causal patterns

We found:

- Innovations came from neighboring field whose researchers pollinated new field
- Midwifed by government funding for collaboration/group work on shared problems



In that spirit, let's apply
computational linguistics to food!



The Linguistics of the Everyday

Words on potato chip packages
reveal identity in American food

Expensive chips



Cheap chips



Sample from the corpus:



Bourdieu's *Distinction*

Survey: French taste in the 1960s correlated with class

- Working class had “popular” tastes
 - the *Blue Danube waltz*
 - heavy starchy meals (cassoulet)
- High status class had “refined” tastes
 - *Well-Tempered Clavier* or Breughel
 - new ethnic or health foods (curry, brown rice)

Bourdieu's proposal:

- Not about absolute quality
- About distinguishing upper class from lower class

Bourdieu's *Distinction*

In matters of taste, more than anywhere else, all determination is **negation**; and tastes are perhaps first and foremost distastes, disgust provoked by horror or visceral intolerance (“sick-making”) of the tastes of others.

Bourdieu, *Distinction*

Let's measure linguistic *distinction*

Comparison

- “*more*”, “*less*”
- “*least*”, “*best*”, “*finest*”
- “*unique*”

Negation

- “*not*”, “*no*”, “*never*”, “*didn't*”

Distinction in expensive chips

5x more frequent in expensive chips

*Because of our **unique** baking process...*

in a class of their own

*...deliciously **different**...*

***best** in America...*

*crunchy bite you won't find in **any other** chip*

***less** fat than other leading brands...*

Every additional negative word adds 4 cents to the price per ounce

Say “no”

nothing fake or phony.
no fake colors, no fake flavors,
no fluorescent orange fingertips,
no wiping your *greasy* chip hand
on your jeans. no, really.

Expensive Chips: Health

Chips are a health food!

But expensive bags mention health 6 times more than cheap!

all natural

no preservatives

no artificial flavors or colors

no cholesterol

0 grams saturated fat

0 grams trans fat

gluten free

Cheap Chips: Traditional authenticity

in the shadow of the **Cascade Mountains**

made in the **great Pacific Northwest**

classic American snacks

using an **old family recipe**

time-tested standard

85-year-old recipe

a **time-honored tradition**

since 1921

the chips that **built our company**

Bill and Sally Utz believed

Expensive chips: Natural authenticity

all **natural**

great taste...**naturally**

still made with all **natural** oil

absolutely **nothing artificial**

only **real food** ingredients

Yukon Gold potatoes

only the **finest** potatoes

hand-rake every batch



Language and class/expense

Expensive

Health

“Natural” Authenticity

Negation

Cheap

Traditional Authenticity

How do menus reflect socio-economic differences?



What linguistic differences are reflected in cheap versus expensive menus?

Menus as reflections of attitudes toward socio-economic class

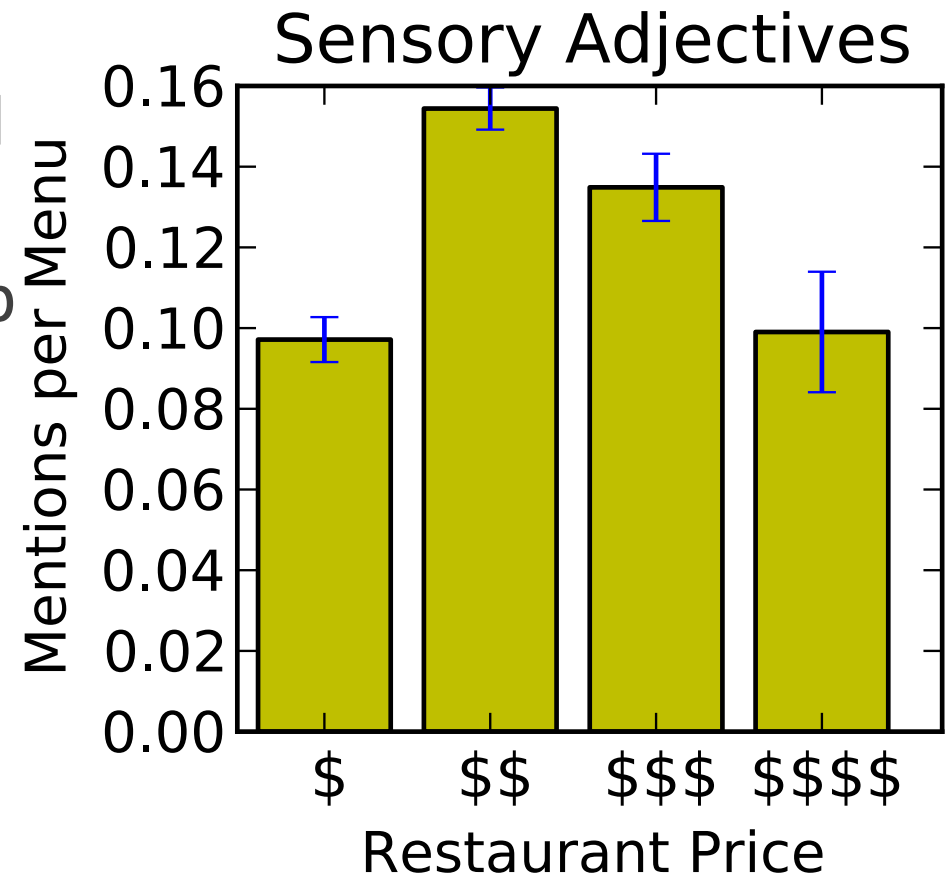
Online menus from 6562 restaurants

- 650,000 menu items
- 5,000,000 words
- allmenus.com, yelp.com

Lots of adjectives in \$\$ menus

zesty, rich, golden brown, crispy, creamy

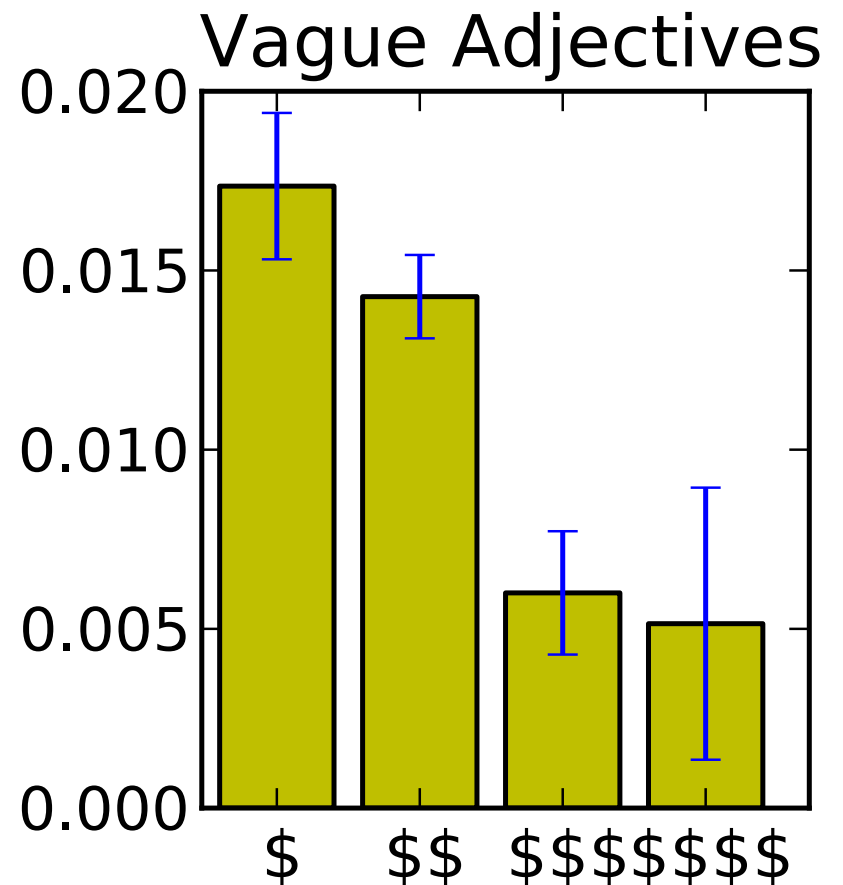
Crispy white-meat tenders served with a **creamy** Creole sauce
rich, **creamy** spinach artichoke dip
Creamy, homemade fettuccine alfredo
zesty chili pepper cream sauce



Lots of vague filler words in \$ menus

Delicious, freshly, flavorful

The **delicious** taste
delicious outdoor grill flavor
flavorful entrées
flavorful ancho-chile
two **freshly** made sides
freshly steamed broccoli



Why Expensive Menus are short

Why say food is “*fresh*”?

- Grice’s Maxims of Quantity and Relevance:
 - The hearer needs to know it’s fresh
 - I am trying to communicate the freshness of my food

Why would you need to know?

- Because you don’t already know if it’s fresh
- i.e. you aren’t sure if it’s fresh

Expensive restaurants want you to be sure

- I say nothing so you *assume* food is fresh

Why Middle Priced Menus are long

Feltovich, Nick, Rick Harbaugh, and Ted To (2002). Too cool for school? Signalling and countersignalling. RAND Journal of Economics Vol. 33, No. 4, Winter 2002 pp. 630–649H.

Grice, Paul (1975). "Logic and conversation". In Cole, P.; Morgan, J. Syntax and semantics. 3: Speech acts. New York: Academic Press. pp. 41–58.

Game theoretic model

- Assume 3 class: high, mid, low,
- And assume other noisy cues to quality (location, expensive, décor)
- Mid signals to show isn't low
- High countersignals (doesn't signal) to show isn't mid

Grice in action: *real* on menus

\$

- chocolate chip pancakes served with **real whipped cream**
- home made meatloaf served with **real mashed potatoes**
chicken cutlet: melted swiss cheese on a roll with lettuce, tomato, russian dressing and **real bacon bits**

\$\$

- california roll: **real crab** and avocado
- blueberry whole grain pancakes with **real maple syrup**

no \$\$\$ or \$\$\$\$

Aside: semantics and the history of artificial food

From the New York Public Library's Buttolph collection:

1990s: **real bacon** (not Bacon Bits).

1970/80s: **real whipped cream** (not Cool Whip)

real sour cream (not Imo).

1960s: **real butter** (not margarine).

1930/40s: **genuine calves liver**.

1900: **real German beer** and **real turtle** (not ale or mock turtle)

What do fancy restaurants do instead?

Use rare words

- *tonnarelli, bastilla, persillade*

Use long words:

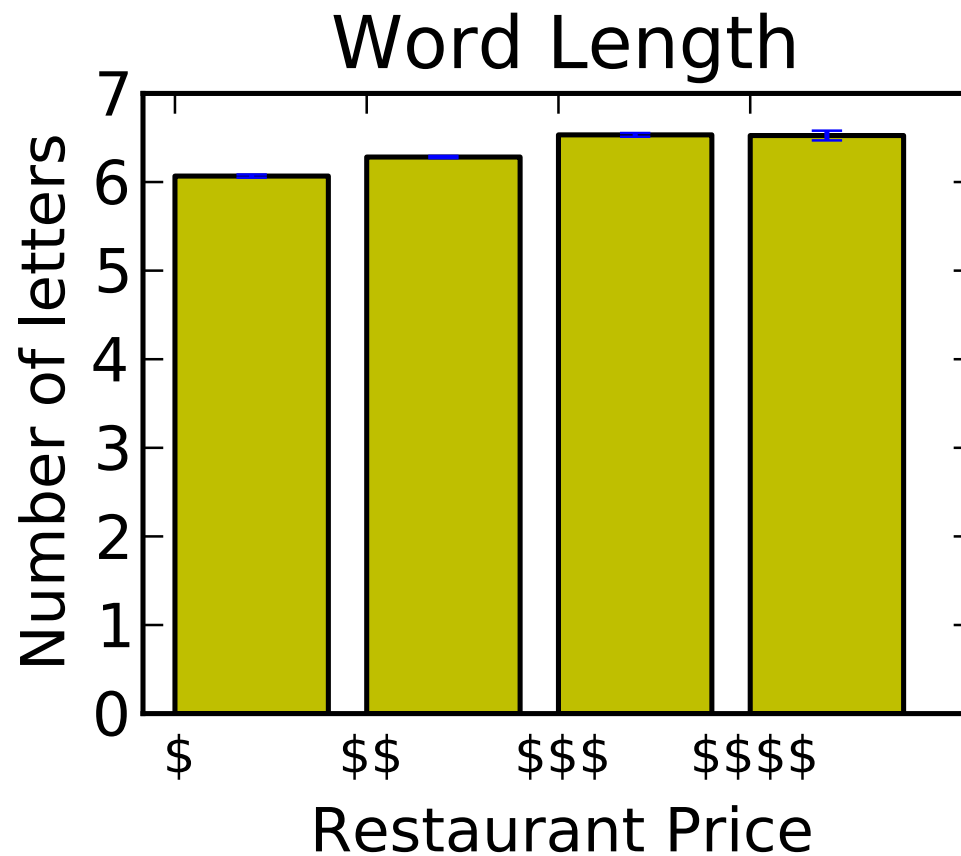
- *decaffeinated, accompaniments, complements, exquisitely*

cheap restaurants:

- *decaf* not *decaffeinated*, *sides* not *accompaniments*.

What do fancy restaurants do?

Each additional average letter = 18 cents



Expensive restaurant menu:

Robin Lakoff (2006). Identity a la carte:
you are what you eat. In De Fina,
Schiffrin, and Bamberg (eds), *Discourse
and Identity*. Cambridge.

caviar

(cru) golden eye snapper

amberjack

herring

abalone

trout roe

sea urchin

cardoon

brassicas

toffee

wood pigeon

winter citrus

black walnut

ice cream

tea

Cheap restaurant menu

SkinnyLicious™ is our
of fresh and delicious
options with lower calorie
signature rich taste. Skin
redefines low calorie



To Place Your Take Out Order Please Call:
(650) 473-9622
375 University Avenue
Palo Alto

- FREE**
- MARGHERITA
Fresh Tomato, Basil, Mozzarella
 - Fontina
 - TOSSED GREEN SALAD
With Your SkinnyLicious®
Romaine Lettuce, Cucumber
 - SKINNYLICIOUS®
Asparagus, Green Beans,
Romaine and White

- SKINNYLICIOUS®**
A Delicious Blend of Grilled Chicken, Roasted Green Beans, Corn, Bacon, Blue Cheese and Apple with Our SkinnyLicious® Vinaigrette
- SKINNYLICIOUS® ASIAN CHICKEN SALAD 13.50**
Grilled Chicken, Romaine, Snow Peas, Carrots, Bean Sprouts, Green Onions, Almonds and Sesame Seeds Served with Our SkinnyLicious® Sesame-Soy Dressing
 - SKINNYLICIOUS® PEAR & ENDIVE SALAD 13.50**
Grilled Chicken, Endive, Radicchio, Arugula, Butter Lettuce, Roasted Pear, Blue Cheese, Candied Pecans and Tomato Served with Our SkinnyLicious® Vinaigrette
 - MEXICAN TORTILLA SALAD 13.50**
Crispy Corn Tortilla Topped with Grilled Chicken Breast and Black Beans with Mixed Greens, Fresh Corn, Green Onion and Cilantro. All Tossed in Our SkinnyLicious® Vinaigrette and Garnished with a little Avocado Cream Sauce, Salsa and Sour Cream
 - SKINNYLICIOUS® SPICY CHICKEN SALAD 13.50**
Warm Grilled Chicken, Roasted Poblano, Red and Yellow Peppers, Fresh Corn, Black Beans, Onions, Rice and Cilantro. Served with Mixed Greens and SkinnyLicious® Spicy Vinaigrette
 - SKINNYLICIOUS® HERB CRUSTED SALMON SALAD* 16.50**
Our Wonderful Fresh Herb Crusted Salmon Served Chilled on Top of Baby Lettuces, Tomato and Vegetables. Tossed in Our SkinnyLicious® Vinaigrette
 - SEARED TUNA TATAKI SALAD* 16.50**
Fresh Ahi Lightly Seared and Served Rare with Avocado, Tomato and Mixed Greens Tossed with Wasabi Vinaigrette
- Modifications May Change Calorie Count
Bread is not included in the calorie count and is served on request on
Indicates Butter or Cream in the preparation
- Not all ingredients are listed in the menu. Please let your server know if you have any food allergies.

*Contains raw or undercooked ingredients.

*Consuming raw or undercooked meats, poultry, pork, seafood, shellfish or eggs may increase risk of food borne illness.†

small plates & snacks

- STUFFED MUSHROOMS 4.95**
Fontina and Parmesan Cheese, Garlic and Herbs in a Wine Sauce
- WHITE BEAN HUMMUS 4.95**
Served with Warm Flatbread
- BEETS WITH GOAT CHEESE 4.95**
Fresh Beets, Apples, Baby Arugula, Pecans and Vinaigrette
- CHARRED SHISHITO PEPPERS 5.95**
Mildly Spicy Asian Peppers Seasoned with Salt
- CHICKEN SAMOSAS 4.95**
Crispy Wrappers Filled with Spiced Chicken. Served with Cilantro Dipping Sauce
- SWEET CORN FRITTERS 4.95**
Fresh Corn in a Light Crispy Batter
- FRIED ZUCCHINI 4.95**
Lightly Breaded and Topped with Parmesan Cheese. Served with Ranch Dressing
- HAND BATTERED ONION RINGS 3.95**
Served with Ranch Dressing
- MINI CORN DOGS 4.95**
Four All Beef Mini Hot Dogs
- WARM CRAB & ARTICHOKE DIP 6.95**
A Delicious Blend of Crab, Artichokes and Cheese Served Warm with Grilled Sourdough Bread
- VIETNAMESE TACOS 5.95**
Steamed Asian Buns with Roasted Pork, Marinated Cucumbers, Carrots and Onion with Chiles, Cilantro and Sesame Seeds
- CRISPY CRAB BITES 6.95**
Bite-Sized Little Crab Cakes. Served with Mustard Sauce
- TEMPURA SHRIMP STUFFED PEPPERS 6.95**
Shishito Peppers Stuffed with Shrimp and Tempura Fried Until Crisp. Served with Sweet-Hot Chili Sauce
- FRESH BAKED FLATBREADS 5.50**
- MARGHERITA 6.95**
Fresh Tomato, Basil and Mozzarella
- SAUSAGE AND RICOTTA 6.95**
Fontina, Parmesan and Romano Cheeses, Garlic Crumbs and Herbs
- GREEK SALAD 4.95**
Feta Cheese, Tomato, Cucumber, Kalamata Olives, Red Onion and Vinaigrette
- LITTLE HOUSE SALAD 3.95**
Tossed in Our Vinaigrette
- ENDIVE SALAD 5.95**
Belgian Endive, Radicchio, Glazed Pecans, Blue Cheese and Vinaigrette
- ARUGULA SALAD 4.95**
Marcona Almonds, Golden Raisins, Parmesan, Lemon and Olive Oil
- CHICKEN CROQUETTES 4.95**
Filled with Creamy Fontina and Fried Crisp
- CRISPY FRIED CHEESE 4.95**
Mozzarella and Fontina Cheeses with Marinara Sauce
- CRISPY ARTICHOKE HEARTS 4.95**
Served with Lemon-Garlic Aioli
- EDAMAME 3.95**
Soy Beans Steamed in Their Pods
- AHI TARTARE* 6.95**
Raw Tuna with Avocado and Soy-Ginger Sesame Sauce
- DYNAMITE SHRIMP 6.95**
Crispy Tempura Shrimp Tossed with Our Spicy Dynamite Sauce
- WILD MUSHROOM 6.95**
Garlic, Shallots and Fresh Herbs
- ROASTED PEAR AND BLUE CHEESE 6.95**
Pecans, Arugula and Caramelized Onion

Avocado, Tomato, Onions, Cilantro and Crema. Served with Spanish Rice
Chicken 9.95 Shrimp 12.95

WHITE CHICKEN CHILI 11.95
A Generous Bowl of Chicken, White Beans, Roasted Green Chiles, Onions and Garlic with a Touch of Cream. Garnished with Steamed Rice and Fresh Salsa

TUSCAN CHICKEN 14.50
Grilled Chicken Breast with Tomatoes, Artichokes, Capers, Fresh Basil and Balsamic Vinaigrette. Served over Fresh Vegetables and Farro

B.B.Q. CHICKEN 14.50
Charbroiled Chicken Breast Glazed with Our B.B.Q. Sauce. Served with Green Beans and Corn Succotash

SKINNYLICIOUS® GRILLED CHICKEN 15.50
Lightly Pounded Chicken Breast Charbroiled and Topped with a Tomato-Arugula Salad and Parmesan Cheese. Garnished with Asparagus and Steamed Rice

SKINNYLICIOUS® GRILLED SALMON* 17.95
Served with Assorted Fresh Vegetables

SKINNYLICIOUS® HERB CRUSTED SALMON* 19.95
Served with Lemon Sauce and Assorted Fresh Vegetables

PETITE GRILLED TENDERLOIN OF BEEF* 24.95
Our Petite Filet Mignon Served with Fresh Vegetables

FRESH VEGETABLE PLATTER 13.95
A Variety of Grilled and Roasted Fresh Vegetables Seasoned with a little Garlic-Infused Extra Virgin Olive Oil and Farro

glamburgers®

All Served with French Fries or Green Salad
Sweet Potato Fries 1.00 extra

We use premium Certified Angus Beef® or American Style Kobe for all of Our Burgers

- OLD FASHIONED BURGER* 9.50**
Charbroiled on a Toasted Broche Bun with Lettuce, Tomato, Onion, Pickles and Mayonnaise
- CLASSIC BURGER* 11.50**
A Gigantic Chop House Hamburger. Served with a Slice of Grilled Red Onion, Lettuce and Tomato
- WILD MUSHROOM BURGER* 11.50**
Our Great Glamburger Challenge Winner! Lots of Sautéed Mushrooms, Onions and Mayo, Covered with Melted Swiss and Fontina Cheese
- GREEN CHILE CHEESEBURGER* 11.50**
Spicy Green Chiles, Melted Cheese and Onions with Tortilla Strips, Salsa and Chipotle Mayo
- BLUE CHEESE B.L.T. BURGER* 11.50**
Crispy Bacon, Lettuce, Tomato, Onion and Mayonnaise with Lots of Blue Cheese
- FACTORY BURGER* 10.50**
Charbroiled with Cheddar Cheese, Tomato and Grilled Onions on Sourdough French or Wheat Loaf
- KOBE BURGER* 13.50**
American Style Kobe Beef with Sautéed Mushrooms and Onions
- SMOKEHOUSE B.B.Q. BURGER* 11.50**
Smoked Bacon and Melted Cheddar with Crispy Onion Rings and B.B.Q. Ranch Sauce
- MONTEREY CHEESEBURGER* 11.50**
Avocado, Melted Jack Cheese, Arugula and Red Onion with Honey-Mustard Mayo
- MEMPHIS BURGER* 11.50**
Topped with Slow Roasted B.B.Q. Pork, Melted Cheddar, Cole Slaw, Pickles and Mayonnaise

specialties

SEAFOOD

- RIMP PLATTER 14.95**
d Crisp with French Fries and Cole Slaw
- EANS SHRIMP 14.95**
tatoes, Peppers, Mushrooms, Onions and Garlic y Sauce. Served with White Rice
- FRANCHESE 14.95**
s, Peas, Shallots, Garlic and Parmesan Cheese Wine and Herbs. Served with Pasta
- IP SCAMPI 19.95**
with Whole Cloves of Garlic, White Wine, mato. Served with Angel Hair Pasta
- CHICKEN GUMBO 16.95**
le Sausage, Tomatoes, Peppers, Onions and e Broth with Cream. Topped with Steamed White Rice
- CK PEPPER SHRIMP 17.95**
Very Spicy Jamaican Black Pepper Sauce.
- 15.95 rice, onion Beans, Plantains and Cool Mango Salsa with Chicken and Shrimp 17.95

AR-B-QUE SALMON* 15.95
ed with Sweet and Spicy B.B.Q. Sauce ed Potatoes, Corn Succotash and Crispy Onion Strings

SH GRILLED SALMON* 18.95
Served with Potato and Vegetable

JUSTED FILET OF SALMON* 19.95
Delicious Lemon Sauce, Asparagus and Mashed Potatoes

MISO SALMON* 19.95
n Served with Snow Peas, White Rice and a Delicious Miso Sauce

BI CRUSTED AHI TUNA* 21.95
Rare Ahi Served with Julienne Vegetables, Miso Sauce and Rice

COMBINATIONS

- Served with Mashed Potatoes
- SCAMPI AND STEAK DIANE* 19.95**
- MADEIRA AND STEAK DIANE* 19.95**
- AND HERB CRUSTED SALMON* 19.95**
- AMPI AND CHICKEN MADEIRA 19.95**
- SALMON* AND SHRIMP SCAMPI 19.95**
- r Any Combination of the Above

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Pecan Brownie a

Snickers Bar

Carrot Cake au

Walnut-Broom

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Linguistics and economics

Expensive menus are linguistically **modest**

- Modest advertising is a way of displaying luxury status

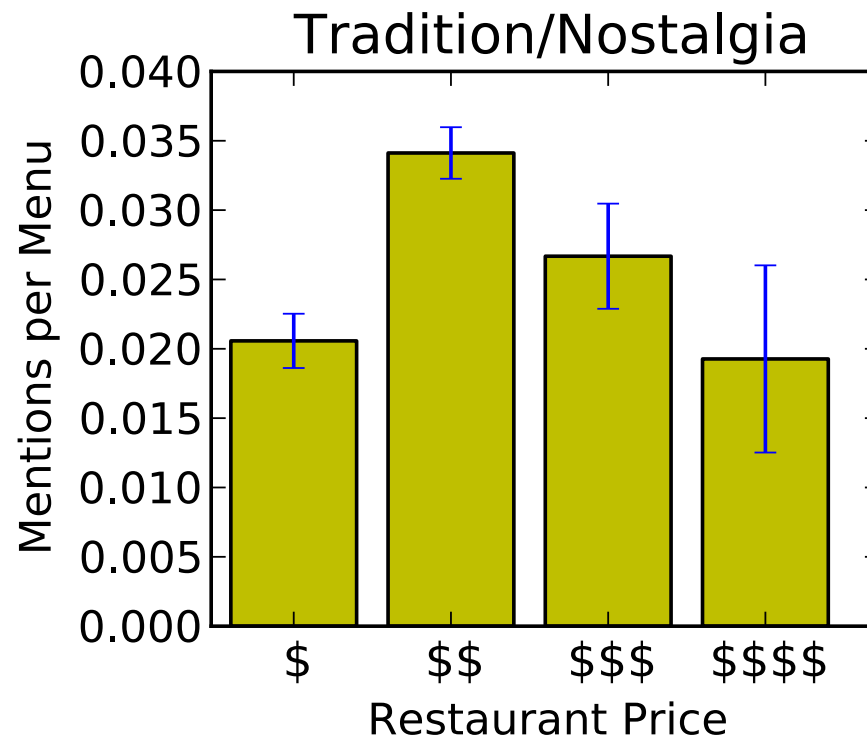
Traditional authenticity in \$\$ restaurants:

fresh **homemade** guacamole and chip

old fashioned beef stew

annie's famous pot roast homemade **just like mom's**

grandma minnie's fried chicken salad



Expensive restaurants use natural authenticity

HERB ROASTED **ELYSIAN FIELDS FARMS** LAMB

Eggplant Porridge, Cherry Peppers,

Greenmarket *Cucumbers and Pine Nut Jus*

GRASS FED ANGUS BEEF CARPACCIO

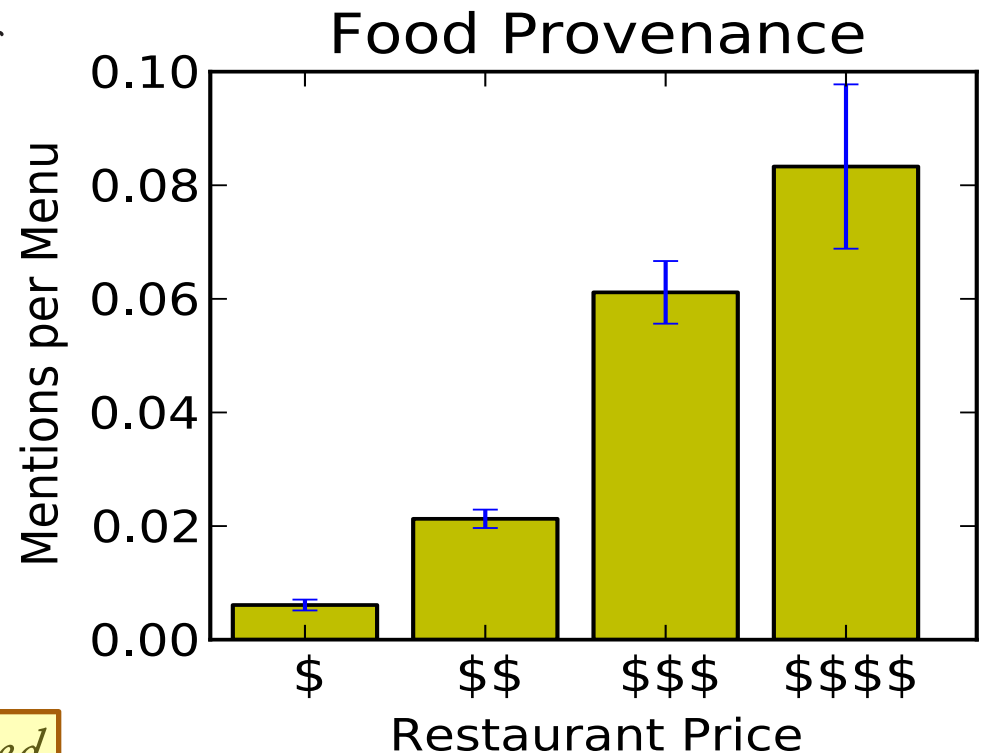
Pan Roasted King Trumpet Mushrooms

Dirty Girl Farm *Romano Bean Tempura*

Persillade, Extra Virgin Olive Oil

BISON BURGER

8 oz. **blue star farms**, **grass fed** & **pasture raised**,
melted gorgonzola, grilled vegetables



More on social aspects of word meaning: The Tiki Lounge effect

exotic, oriental, spices, spicy

exotic five spices

exotic blend of indian spices

island **spices** you crave: An **exotic**, delicious sauce.

oriental vinaigrette

Thai curry herbs and **spices**

kick of southwestern **spice**

spicy Santa Fe sauce

spicy garlic & lime grilled shrimp

Dishes with these words cost 3 cents more per word

Framing in restaurant reviews



Dan Jurafsky, Victor Chahuneau, Bryan R. Routledge, and Noah A. Smith. 2014. Narrative framing of consumer sentiment in online restaurant reviews. *First Monday* 19:4

900,000 online reviews

The bartender... absolutely horrible... we waited 10 min before we even got her attention... and then we had to wait 45 - FORTY FIVE! - minutes for our entrees... stalk the waitress to get the cheque... she didn't make eye contact or even break her stride to wait for a response

Log odds ratio

Log likelihood ratio: does “horrible” occur more % in corpus A or B?

$$\begin{aligned} & \log P_A(\text{“horrible”}) - \log P_B(\text{“horrible”}) \\ &= \log \left(\frac{\text{count}_A(\text{“horrible”})}{\sum_{\text{word in } A} \text{count}(\text{word})} \right) - \log \left(\frac{\text{count}_B(\text{“horrible”})}{\sum_{\text{word in } B} \text{count}(\text{word})} \right) \end{aligned}$$

Log odds ratio: does “horrible” have higher odds in A or B?

$$\begin{aligned} & \log \left(\frac{\frac{\text{count}_A(\text{“horrible”})}{NA}}{1 - \frac{\text{count}_A(\text{“horrible”})}{NA}} \right) - \log \left(\frac{\frac{\text{count}_B(\text{“horrible”})}{NB}}{1 - \frac{\text{count}_B(\text{“horrible”})}{NB}} \right) \\ & \log \left(\frac{\text{count}_A(\text{“horrible”})}{NA - \text{count}_A(\text{“horrible”})} \right) - \log \left(\frac{\text{count}_B(\text{“horrible”})}{NB - \text{count}_B(\text{“horrible”})} \right) \end{aligned}$$

Log odds ratio with a prior

Log odds ratio:

$$\log \left(\frac{f_A(\text{"horrible"})}{N_A - f_A(\text{"horrible"})} \right) - \log \left(\frac{f_B(\text{"horrible"})}{N_B - f_B(\text{"horrible"})} \right)$$

With a prior:

$$\log \left(\frac{f_A(\text{"horrible"}) + f_{\text{prior}}(\text{"horrible"})}{N_A + N_{\text{prior}} - (f_A(\text{"horrible"}) + f_{\text{prior}}(\text{"horrible"}))} \right) - \log \left(\frac{f_B(\text{"horrible"}) + f_{\text{prior}}(\text{"horrible"})}{N_B + N_{\text{prior}} - (f_B(\text{"horrible"}) + f_{\text{prior}}(\text{"horrible"}))} \right)$$

Log odds ratio informative Dirichlet prior

Monroe, Colaresi and Quinn (2008)

Find words that are statistically overrepresented in a particular category of review compared to another

$$\hat{\delta}_w^{(i-j)} = \log \left(\frac{y_w^i + \alpha_w}{n^i + \alpha_0 - (y_w^i + \alpha_w)} \right) - \log \left(\frac{y_w^j + \alpha_w}{n^j + \alpha_0 - (y_w^j + \alpha_w)} \right)$$

(n^i is the size of corpus i , n^j is the size of corpus j , y_w^i is the count of word w in corpus i , y_w^j is the count of word w in corpus j , α_0 is the size of the background corpus, and α_w is the count of word w in the background corpus.)

$$\sigma^2 \left(\hat{\delta}_w^{(i-j)} \right) \approx \frac{1}{y_w^i + \alpha_w} + \frac{1}{y_w^j + \alpha_w}$$

Final statistic for a word: z-score of its log-odds-ratio:

$$\frac{\hat{\delta}_w^{(i-j)}}{\sqrt{\sigma^2 \left(\hat{\delta}_w^{(i-j)} \right)}}$$

Top 50 words associated with one-* reviews by Monroe, *et al.* (2008) method

Linguistic Class	Words in Class
Negative sentiment	worst, rude, terrible, horrible, bad, awful, disgusting, bland, tasteless, gross, mediocre, overpriced, worse, poor
Linguistic negation	no, not
1 pl pronouns	we, us, our
3rd pronouns	she, he, her, him
Past tense verbs	was, were, asked, told, said, did, charged, waited, left, took
Narrative sequencers	after, then
Common nouns	manager, waitress, waiter, customer, customers, attitude, waste, poisoning, money, bill, minutes
Irrealis modals	would, should
Complementizers	to, that

Language of bad reviews?

Negative sentiment language

horrible awful terrible bad disgusting

Past narratives about people (Biber's factor)

waited, didn't, was

he, she, his, her,

manager, customer, waitress, waiter

Frequent mentions of **we** and **us**

... **we** were ignored until **we** flagged down one waiter to go get **our** waitress ...

Other narratives with this language

A genre using:

Past tense, we/us, negative, people narratives

Texts written by **people suffering trauma**

- Chat group discussions after Princess Diana's death
 - Stone, L.D. & Pennebaker, J.W. (2002). Trauma in real time: Talking and avoiding online conversations about the death of Princess Diana. *Basic and Applied Social Psychology*, 24, 172-182
- Blog posts after September 11, 2001
 - Cohn, M.A., Mehl, M.R., & Pennebaker, J.W. (2004). Linguistic markers of psychological change surrounding September 11, 2001. *Psychological Science*, 15, 687-693
- Student newspaper reports after a campus tragedy
 - Gortner, E.-M., & Pennebaker, J.W. (2003). The archival anatomy of a disaster: Media coverage and community-wide health effects of the Texas A&M Bonfire Tragedy. *Journal of Social and Clinical Psychology*, 22, 580-603

Why? Pennebaker's *social stage model of coping*

- people feel a need to tell stories expressing their negative emotion,
- “we/us/our” suggests we are seeking comfort in community
- Past tense used to distance ourselves from the traumatic event

Implications

1-star reviews are not descriptions of bad food.

They are trauma narratives!

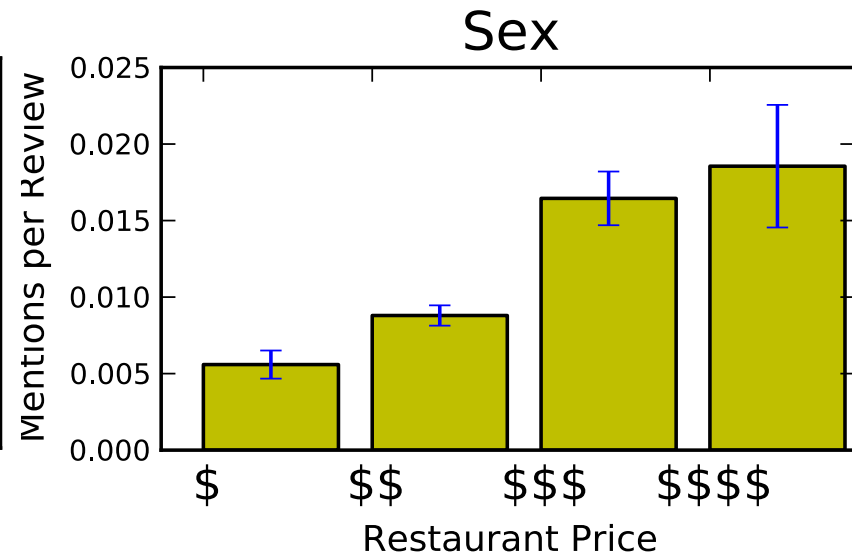
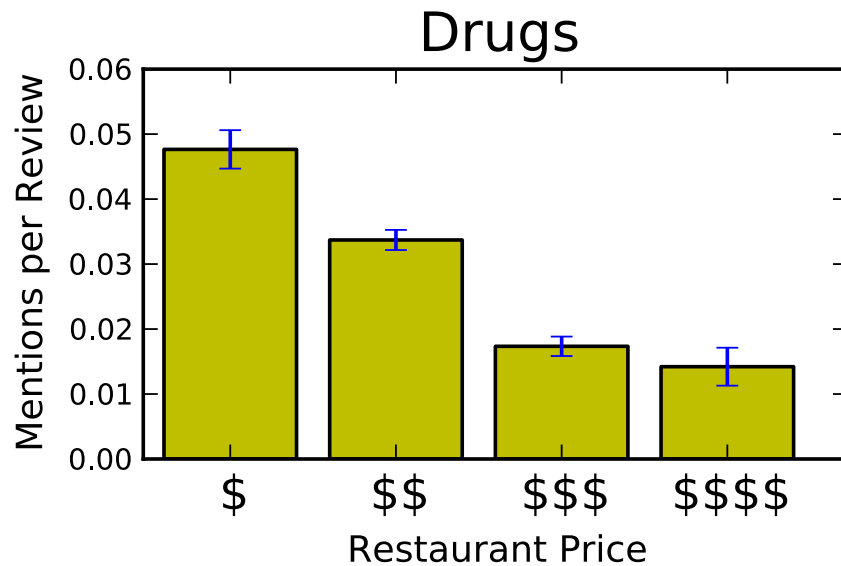
The lesson of bad reviews:

We are very sensitive to personal interaction

Positive Reviews?

addicted to wings
the fries are like crack
....crave... cupcakes

orgasmic pastry
seductively seared...
very naughty pork belly



Why the addiction narrative?

Table 4: Foods most likely to be described using drug metaphors.

Meaty, fatty foods	Starchy comfort food	Sweet food	Small ethnic dishes	Descriptors
burgers	pizza	sweets	sushi	comfort
barbecue	mac and cheese	pancakes, breakfast	dim sum	fried, greasy
chicken wings	pasta/noodles	sugar	tacos, burritos	unhealthy
french fries	soups	chocolate	spam musubi	hearty, satisfying
	sandwiches	beignets	dumplings	junk
			falafel	authentic
			tapas	cheap

Craved foods aren't vegetables, or main courses like meatloaf or fish or even side dishes like mashed potatoes

They are **junk foods** or at least non-normative foods

- Assuage the guilt
- It's not my fault, I had no control, the cupcake made me eat it

Gender and the addiction metaphor?

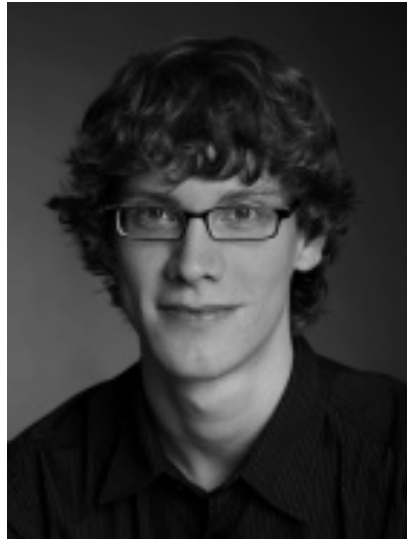
Are women more likely to use the metaphor of drugs than men?

- women are more pressured to conform to healthy eating
- women more likely to mention food cravings
 - Rozin, *et al.* (1991): females are significantly more likely to express cravings for chocolate than males.
 - Zellner, *et al.* (1999), Weingarten and Elston (1990), Osman and Sobal (2006): female undergraduates more likely than males to report food cravings.
- How to test:
 - Figure out the gender of Yelp users from first names
 - Using Social Security Baby Name database
 - See if women use the drug metaphor more.

Are women more likely to use the metaphor of drugs than men?

- Women significantly more likely than men to talk about food as a drug ($p=0.000832$).
- But we don't know the cause:
 - women might be more likely than men to have these cravings
 - women might be more comfortable than men in admitting to these cravings
 - women might have identical desires but be more likely than men to use this particular linguistic metaphor
- By the way
 - Men were more likely to use the language of trauma

The linguistics of food requests



Tim Althoff, Cristian Danescu-Niculescu-Mizil, Dan Jurafsky. 2014. How to Ask for a Favor: A Case Study on the Success of Altruistic Requests. AAAI ICWSM 2014

Question: What language do people use when making successful requests?

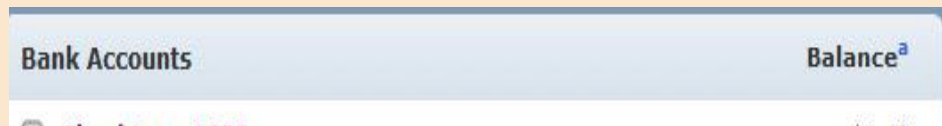
Problem: it depends on the request

Solution: control for the request

21,000 requests for pizza on “Random Acts of Pizza”
Reddit.



Evidentiality: Urgent requests are met more frequently than non-urgent requests (Yinon and Dovrat 1987; Shotland and Stebbins 1983; Colaizzi, Williams, and Kayson 1984; Gore, Tobiasen, and Kayson 1997)



Length: Long effort and can (Lettice et al.)

Reciprocity: Promises to return the favor (Wilke and Lanzetta 1970; Willer et al. 2012; Gray Ward and

Status: People of high status (e.g. occupation or wealth) receive help more often. (Solomon and Herman 1977; Goodman and Gareis 1993)

OliverTw1st

2,989 link karma

1,251 comment karma

[send message](#)

redditor for 2 years

“My g
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I [...] would
able to reciprocate.”

Who gets pizza?

Predictable from the language!

Most important factor: **Pro-social behavior**

- Generalized Reciprocity
 - Promising to Pay it Forward
- Saying thank you
- Having karma in community

Computing the Language of Food

The language of menus and ads

- economics of “modest” advertising
- Health, authenticity, and class

The language of reviews and requests

- social psychology of language
 - the linguistic signs of trauma
 - our complex attitudes toward food and body
 - the rewards of pro-social behavior/language

Some conclusions from the Language of Food

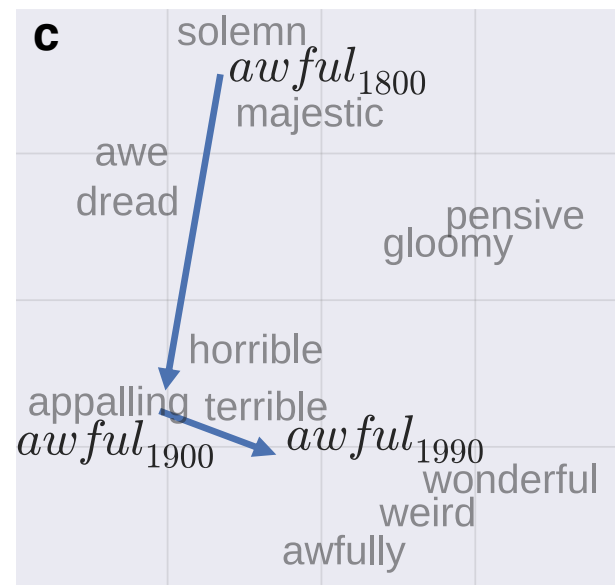
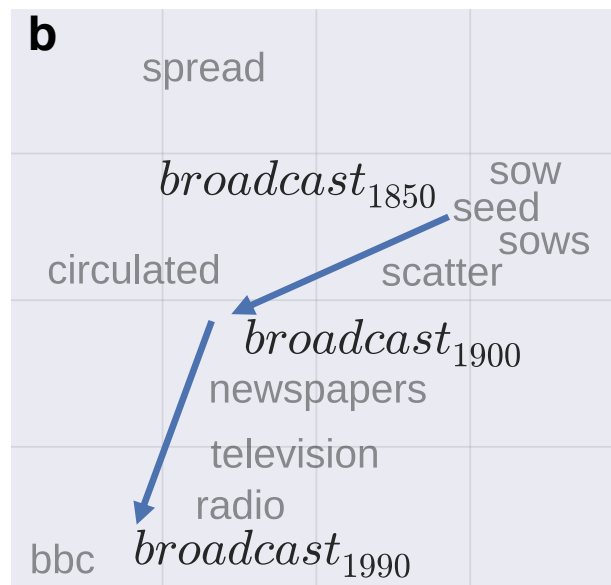
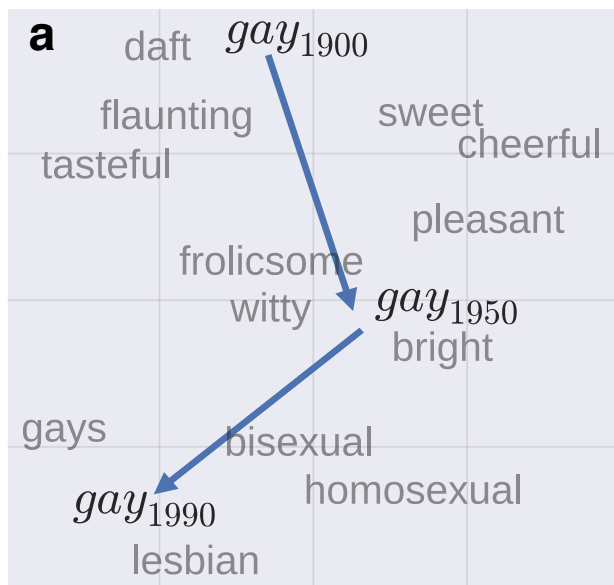
- Innovation happens at interstices, as we borrow and extend the ideas of our neighbors
- People suffer when you are mean to them, and are generous when you are kind
- You can tell a lot about psychology, economics, even evolution if you just look very carefully at the language of food

Other stuff going on in our lab

With Will Hamilton and Jure Leskovec

Computational historical linguistics

- Test linguistic theories of meaning change
- Using 200 years of online corpora



Other stuff going on in our lab

With **Jennifer Eberhardt**, Nick Camp, Camilla Griffiths, Rob Voigt, Vinod Prabhakaran, David Jurgens, Will Hamilton

Police language and race

- Use Oakland police department footage
- Can we extend Cristian's work on politeness to measure **procedural justice**
- **Respect, neutrality, etc. of police officers**
- Do police interactions with whites and blacks differ in aspects of procedural justice as measured from language?