REASONING WITH SOURCES

Evaluating, managing, integrating, and citing the work of others

Writing,
Rhetoric,
And
Professional
Communication

Why Do We Use Sources?

- To gain access to information—facts, statistics, narratives, etc.
- To see what other people think about the topic
- To respond to other statements; to put ourselves in conversation with other scholars
- To build our work on the methods and theories that others have developed, so we don’t have to reinvent them

Why Do We Cite Sources?

- To credit other scholars' work
- To show the sources of our information
- To show how our own ideas developed from thinking about the work of other scholars
- To identify which scholarly conversations we're entering
- To allow other scholars to find and use our sources
- To allow other scholars to judge the relevance, expertise, reliability, and accuracy of our sources
- To allow other scholars to trace our methods and lines of reasoning as a way of testing our ideas
- To allow the discipline as whole to trace the collective development of knowledge (and thus to know what needs correcting if theories are disproven, etc.)

How do we make use of sources?

Examine the following examples—

- How do the ideas and information from a source enter this text?
- How do we know what is from a source and what is from this author?
- How does the source material function? What is its purpose?
- How does the citation function? Why does it take the form it does?

From Marine Biology

Right whales produce sounds ("up calls" or "contact calls") that may function as a means of individual identification. These are the only calls known to be made by newborn calves, their acoustic properties are well-suited for long-range communication, and they appear to be under selection to minimize overlap with ambient noise (Clark, 1982; Parks et al., 2007). Thus, these contact calls represent the most likely means of mother-offspring recognition in right whales.

Frasier, Timothy R., Philip K. Hamilton, Moira W. Brown, et al. "Reciprocal Exchange and Subsequent Adoption of Calves by Two North Atlantic Right Whales (*Eubalaena glacialis*)." *Aquatic Mammals* 36, no. 2 (2010): 115–20. © MinuteMan Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/help/faq-fair-use/.

From Archeology

Definite evidence for whale hunting, including the presence of ethnographically documented whaling tools (reviewed below) and strike marks on whale remains in sites, appears as early as 3000 B.P. and has been entirely limited to the Nuu-chah-nulth and Makah area (Monks et al. 2001). Arguments also have been made for precontact whale hunting on the Queen Charlotte Islands based on ethnohistoric data and the relative abundance of whale bone in sites (Acheson and Wigen 2002). However, most researchers working beyond the region where whaling is ethnographically documented have been reluctant to use such information as evidence for precontact whale hunting.

Losey, Robert J., and Dongya Y. Lang. "Opportunistic Whale Hunting on the Southern Northwest Coast: Ancient DNA, Artifact, and Ethnographic Evidence." *American Antiquity* 72, no. 4 (2007): 659–76. © Cambridge University Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/help/faq-fair-use/.

From Environmental Science

OH-PCBs have been detected in the blood and tissues of humans (*17-20*) and several wildlife species (*21-28*), and those levels and patterns were shown to vary with species, possibly due to species-specific metabolic capacity by phase I CYP and/or phase II conjugation enzymes and binding affinity to TTR (*29, 30*). Such interesting observations suggest the need for studies on OH-PCB residue levels in biota. However, little is known on the patterns and levels of OH-PCBs in cetaceans, which accumulate some of the highest concentrations of PCBs (*26, 28, 31-36*).

Nomiyama, Kei, Satoko Murata, Tatsuya Kunisue, et al. "Polychlorinated Biphenyls and Their Hydroxylated Metabolites (OH-PCBs) in the Blood of Toothed and Baleen Whales Stranded along Japanese Coastal Waters." *Environmental Science & Technology* 44, no. 10 (2010): 3732–38. © American Chemical Society. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/help/faq-fair-use/.

From Literary Studies

To understand modernity, and in particular its insistent compartmentalization of knowledge, [Bruno] Latour invites analysis of what he calls “translation”: the continuous process of exchange between nonhuman and human domains, recognition of which is foreclosed by the “modern constitution” (32). Melville's whales, I will argue, evince precisely this kind of transgressive translation. At certain moments they act as screens for the projection of models for human society; at others they are called upon to shape that society, or are shaped by it.

Armstrong, Philip. "'Leviathan is a Skein of Networks': Translations of Nature and Culture in Moby-Dick." *ELH* 71, no. 4 (2004): 1039–63. © John Hopkins University Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/help/faq-fair-use/.

Citation styles differ

BECAUSE different fields care about:

specific wording and its location in a text (author-page number styles)

currency (author-date styles)

using unpublished sources (footnotes)

data from many sources more than authorship (citation-sequence styles)

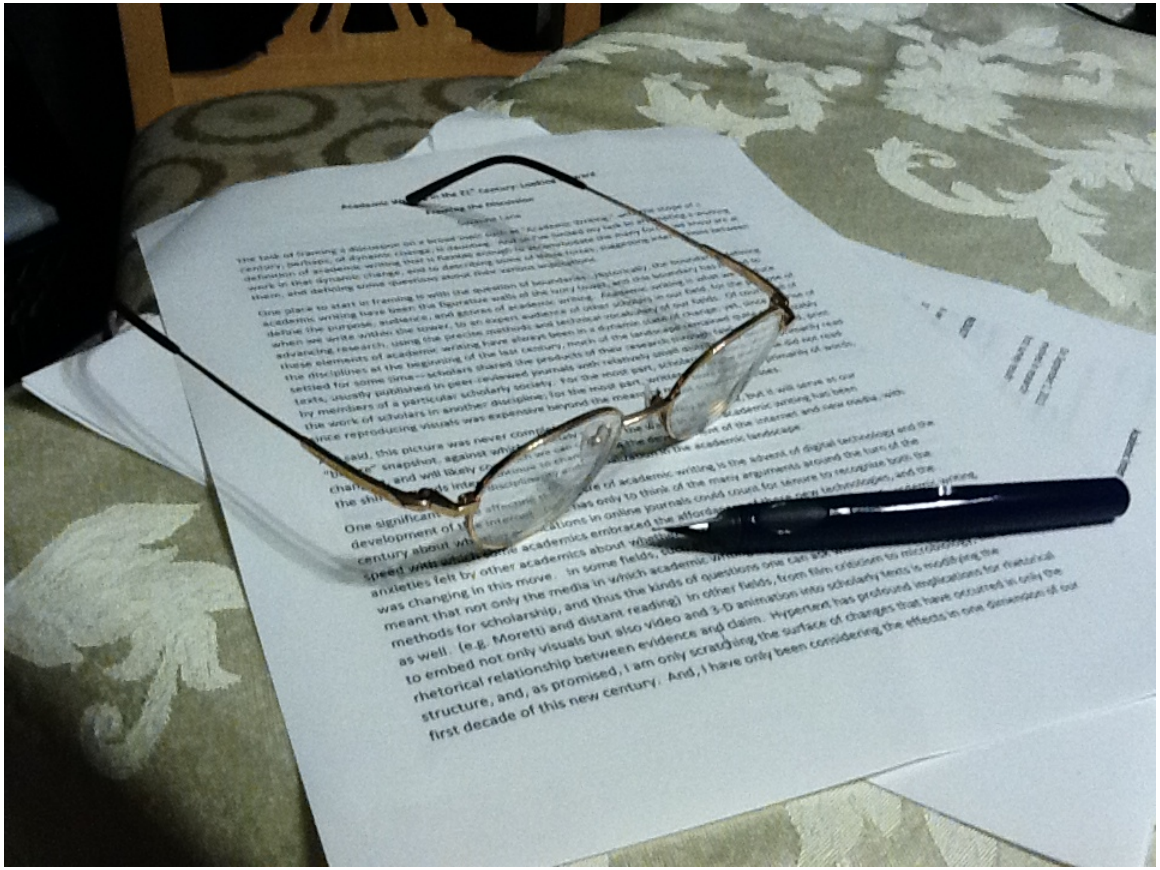
Citation Styles Differ, BUT:

All styles share two main features:

--an in-text marker

--a complete bibliographic reference

Evaluating arguments



How do we know what to use from a source?

How do we indicate our stance / assessment?

Stasis Theory is a useful frame for evaluating and connecting arguments

Fact—does a thing exist? how much? what happened?

Examples: is the ivory-billed woodpecker extinct? What nutrients do carrots provide? What is the intermediary in this chemical reaction?

Definition—what kind of thing is this? (links the concrete to the conceptual, or places a thing in a classification system)

Examples: what exactly is entropy? Does this defendant's action fit the definition of murder? Should this area be classified as a wetlands?

Causation—What are the causes, effects, or consequences of this?

Examples: what caused this outbreak of bird flu? What is the influence of environment on psychology? How will the intensity of cyclones change with increases in sea surface temperature?

Value—How should we evaluate or judge it?

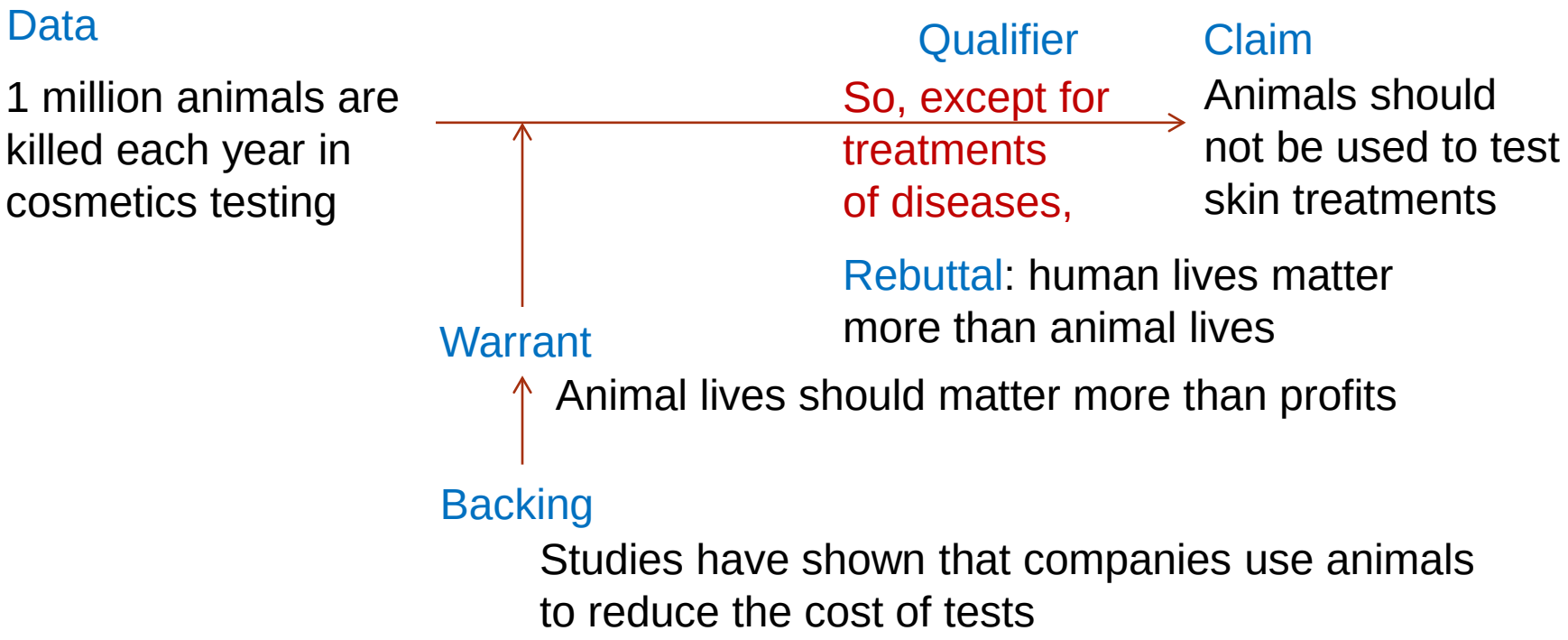
Examples: Would person X make a good advisor? How significant ? What's the best process for refining uranium?

Policy or Action—what should we do because of this?

Examples: Should we ? Should we approve the Keystone XL pipeline project? ?

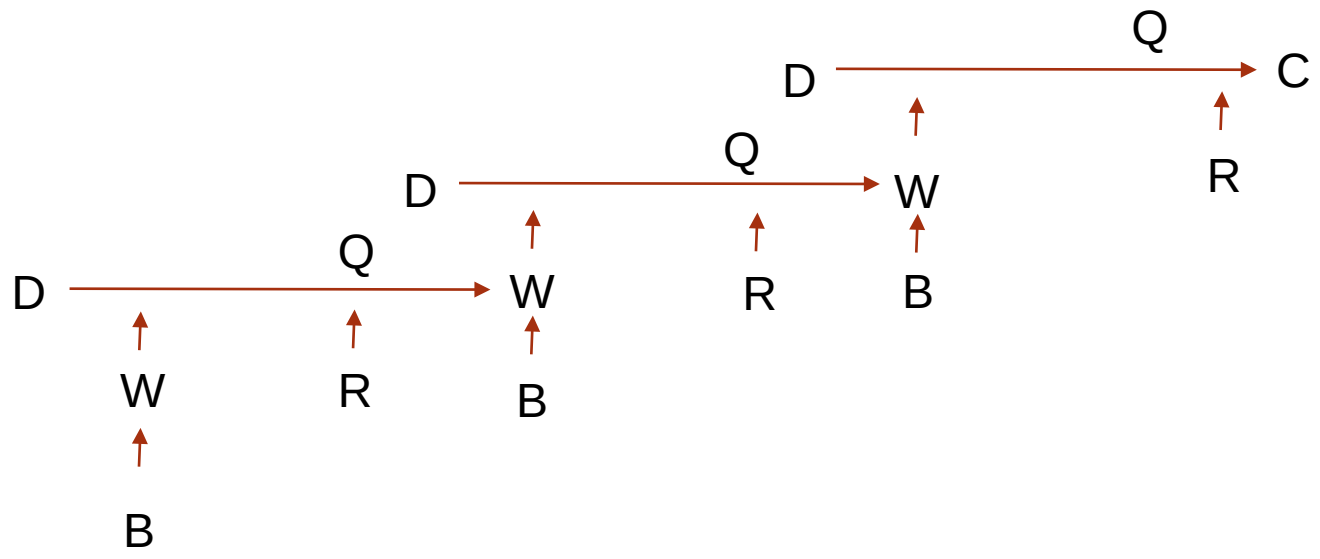
Adapted from "The Stases in Literary and Scientific Argument," by Jeanne Fahnestock and Marie Secor in *Written Communication*, 1988.

Claims in lower stases can form warrants for claims in higher stases



Adapted from Toulmin, Stephen, "The Layout of Arguments" in *Professing the New Rhetorics: A Sourcebook*, 1994. Ed. Theresa Enos and Stuart Brown.

Claims in different stases create chains of reasoning

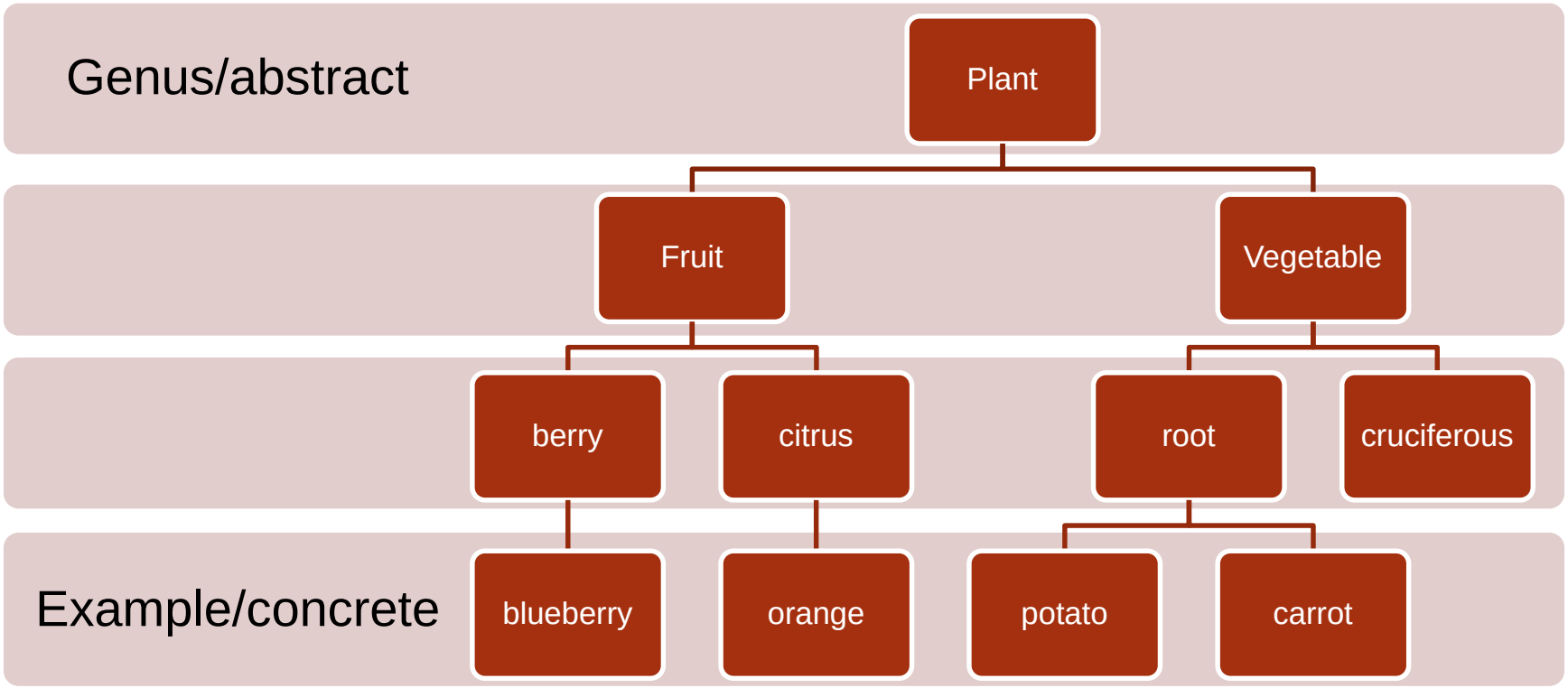


Arguments of fact: Is or is not?

Claims of fact can be true or false if they can be measured absolutely and verified.

If they are measured by proxy or estimated, they are in the realm of the probable, and thus we can argue about the existence or amount.

The stasis of definition lets us navigate the ladder of abstraction, and reason by analogy



And categorize, include and exclude, reason by example, and generalize

Categories: Class, kind, family, type, group, cluster, camp, genre, genus

Inclusion: Is, counts as, meets the qualifications, can be considered, belongs in, typifies, is defined as

Exclusion: is not, is distinct from, unlike, differs from, is a separate case

Cases: Instance, case, member, item, candidate, representative

Typicality: classic, (un)common, (a)typical, central, (un)representative, borderline

Adapted from Davida Charney and Chris Neuwirth, *Having Your Say: Reading and Writing Public Arguments*, 2005.

Elements of causation need to work together

Correlation (correlation implies but is not sufficient for causation)

Sequence (sequence helps us understand directionality in causation, but it is also not sufficient, and alone results in a post hoc ergo propter hoc fallacy)

Agent and mechanism

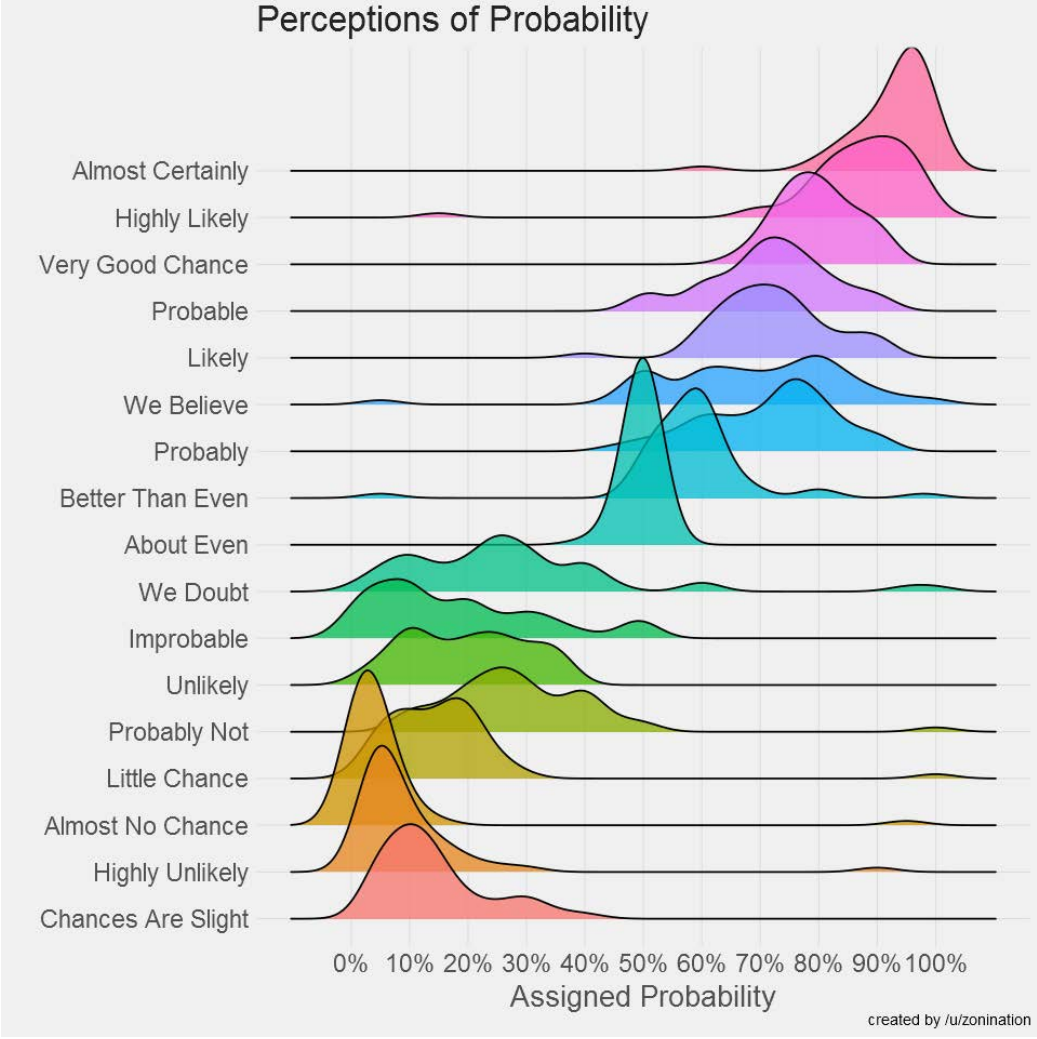
Types of values claims

Comparisons

Ratings on a scale; hierarchies

Trade offs between values

Hedging, (phrases of probability) indicate whether the stasis is “open” or “closed”



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As you read, ask and record:

- What assumptions does the source make?
- What claims does it make?
- How does it use evidence?
- How is the source structured?
- How does the source use its own sources?

- Do you share those assumptions?
- Are the claims convincing? To what extent does the source close any open stases?
- Is the evidence relevant and sufficient?
- What does the structure tell you about the logic of the argument?
- Will you agree with, counter, complicate, extend, or qualify the ideas of the source?

Managing Information from Sources

- How do you manage information as a researcher?
- Can you describe your process of capturing useful facts, theories, methods, mechanisms, results, etc. from your sources?
- Are there particular tools or procedures you use?

Highlighting and margin notes

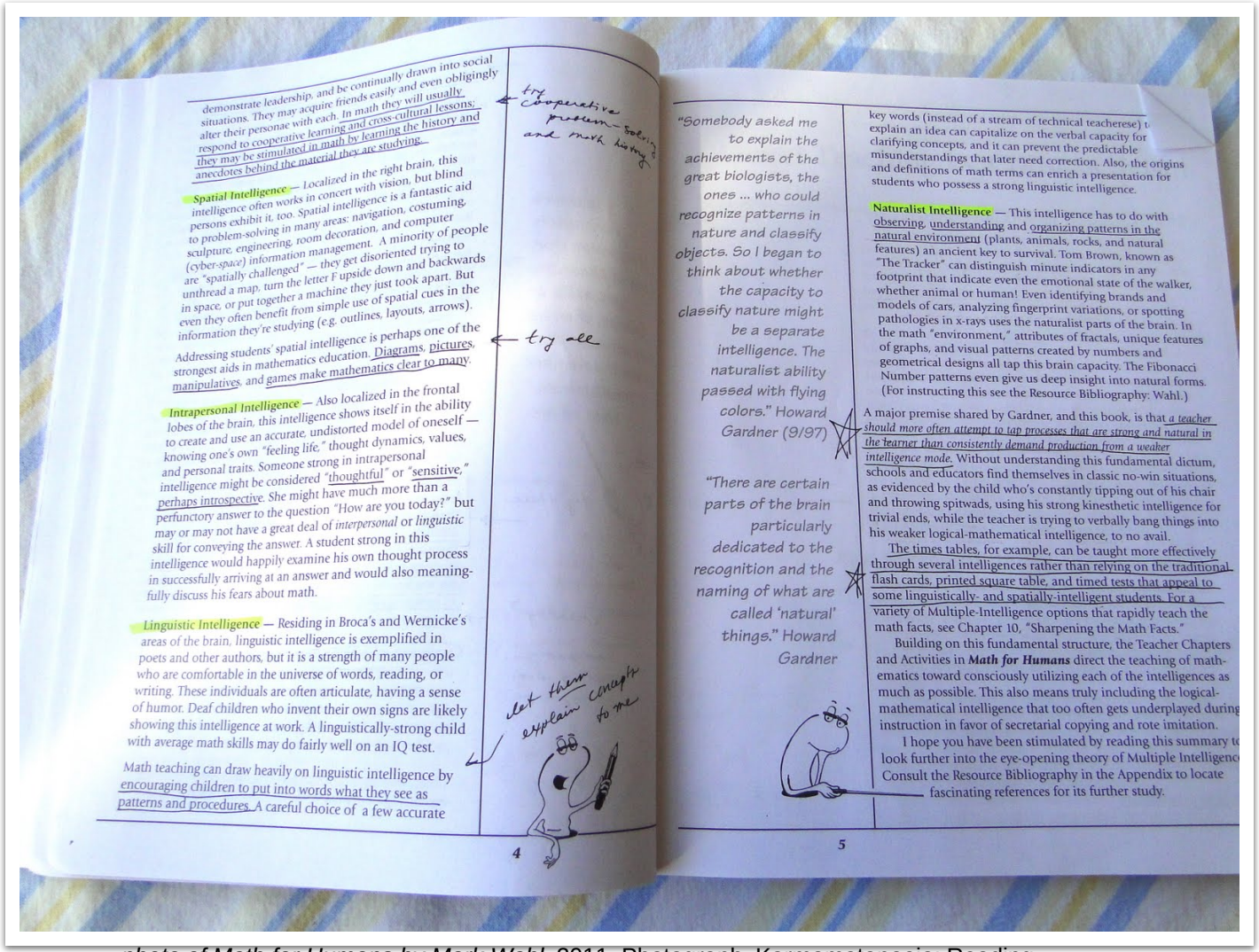

photo of Math for Humans by Mark Wahl. 2011. Photograph. Karmamatopoeia: Reading, Reading, Reading! Web. 19 Jan 2012. <http://karmamatopoeia.blogspot.com/2011/06/>.

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Source Card:

Fischer, Daniel, & Hilmar Duerbeck (1996). *Hubble A New Window to the Universe.* New York: Copernicus.

A

Notecard:

"Galaxy interactions and collisions occurred not only in the early universe but also in the 'recent past,' at lower redshifts and with objects appearing at larger angular size" (p. 77).

A

Conceptual Note-taking

1898 Urban planning conference's 1st PROBLEM: Horse manure. No solution
Horse manure=pollution=transportation byproduct → public health, sanitation problems

Factors affecting the problem: Urban density ↑ → transportation↑

Causal relationships: living standards↑ → trade↑ →transportation ↑ → byproducts↑

New technology amplifies the problem: Railroad ↑ → horse ↑ → manure ↑

Innovation extends use: omnibus → personal transportation ↑ →horse ↑ → manure ↑

General principle: as efficiency ↑→ prices ↓ →usage ↑ → byproducts ↑

Potential uses for byproducts: manure=fertilizer, BUT manure ↑(glut) → fertilizer price ↓

Byproducts have byproducts (2nd order problems): manure ↑ → flies ↑ → disease ↑

More direct byproducts: noise, accidents, traffic congestion, horse disease and death

Final claims: Cars are the solution! The example of the horse pollution problem can be generalized as an indicator of how technology and ingenuity will solve our problems

These notes are based on the article "From Horse Power to Horsepower" by Eric Morris in Access Magazine, 2007.

Literature Review Chart

Table 6. Comparison of studies identified by a systematic literature review that reported stage distribution in relation to quantified smoking status .

Study (Year) Ref No	No of cases, country, time period	% Smokers, Quantified smoking based groups	NSCLC stage profile, Group differences^ in NSCLC stage	Other baseline group differences^ (Gender, Age, Histology)
Holli K, *et al.* (1999) (15)	290; Finland 1983-87	100%; Lifetime Cig : L (<500), M (500-800), H (>800)	Stages I-IV No diff in T or N or M status Stage groups N.A.	Males max (99%) in H, min (72%) in L. No diff in mean age. SqCC (63%) & SCLC (26%) max in H, ADC (17%) max in L.
Maeshima AM, *et al.* (2008) (16)	236; Japan 1984-90	58.9%; BI: NS, Sm 1-500, Sm >500	Stages I-IV No diff in T or N status No diff in stage I *vs.* II-IV distribution	Gender distribution N.A., Age distribution N.A., Series consisted of surgically resected adenocarcinoma.
Guo NL, *et al.* (2009) (17)	327; USA N.A.	100%; Sm <61 PYI, Sm >61 PYI	Stages I-III TNM status N.A. Stage I more in Sm <61 PYI (76.4% *vs.* 64.7%); Stage II more in Sm>61 PYI (20.6% *vs.* 8.4%).	Age ≥60 years more in Sm >61 PYI (77.9% *vs.* 64.4%) Males more in Sm >61 PYI (68.4% *vs.* 42.9%). SqCC (61.0%) more in Sm >61 PYI, ADC (83.2%) more in Sm <61 PYI.
Janjigian YY, *et al.* (2010) (18)	2010; USA 2003-06	83.5%; NS, Sm <15 PY, Sm >15 PY	Stages IIIB-IV TNM status N.A. No diff in stage group	Males max (55.6%) in Sm >15 PY, min (34.4%) in NS. Median age max (65 yrs) in Sm >15 PY, min (59 yrs) in NS. SqCC (12%) max in Sm >15 PY, ADC (69%) max in NS.
Current study	520; India 2008-11	74.0%, NS, L/M (SI 1-300), H (SI>300)	Stages I-IV No diff in T or N status M1 min (39.1%) in H, max (67.4%) in NS. IIIB max (42.1%) in H, min (24.4%) in NS. ETD min (16.6%) in H, max (41.5%) in NS.	Males max 97.9% in H, min (48.1%) in NS. Mean age max (61.0 yrs) in H, min (54.5 yrs) in NS. SqCC (57.9%) max in H, ADC (59.3%) max in NS.

ETD=Extrathoracic disease, BI=Brinkman index, SI=Smoking index, NSCLC=Non-small cell lung cancer, Cig=Cigarettes, Sm=Current/Ex-Smoker, NS=Never-Smokers, PY=Pack Years, PYI=Pack Years Index, H=Heavy, M=Medium, L=Light, max=maximum, min=minimum, resp=respectively, N.A.=Data Not Available, SqCC=Squamous cell carcinoma, SCLC=Small cell lung cancer, ADC=Adenocarcinoma; ^ Statistically significant.

Singh, Navneet, Ashutosh N. Aggarwal, Dheeraj Gupta, et al. "Quantified smoking status and non-small cell lung cancer stage at presentation: Analysis of a North Indian cohort and a systematic review of literature." *Journal of Thoracic Disease* 4, no. 5 (2012):474–84. © Pioneer Bioscience Publishing Company. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/help/faq-fair-use/.

Useful note-taking systems must:

- Track the texts' main claims, purpose, and logical structure
- Record your own responses to the ideas
- Differentiate between your words and ideas and those of the sources
- Make information and ideas malleable, so they can be restructured and used to construct new ideas

How do we incorporate others' ideas?

- Direct Quotation
- Paraphrase
- Summary
- Images

All paraphrases, quotations, summaries, images, ideas, and facts from a source must be cited.

Write a 2-sentence summary of Emanuel 2005

A Paraphrase Must:

- Accurately reflect the meaning of the source

BUT

- Substantially change the source's wording and structure

What cognitive and textual operations do we employ when we paraphrase?

How to Paraphrase

First, identify the central concepts and their logical relationship. Then, keeping that logical relationship intact, invert the structure of the central concepts

Next, look for ways to change syntax and diction

e.g. changing from first to third person;

reordering phrases and clauses and using different subordinating conjunctions to keep the logical relationship intact;

“translating” phrases into more formal or less formal diction;

breaking long sentences into smaller parts, or linking similar smaller parts into one unit;

“translating” concepts from more concrete to more abstract, or vice versa

Check for accuracy and completeness—has the language sufficiently changed? Has the sentence structure sufficiently changed? Has the meaning *not* changed?

Paraphrase this passage from *The Structure of Scientific Revolutions*

“Normal science does and must continually strive to bring theory and fact into closer agreement, and that activity can easily be seen as testing or as a search for confirmation or falsification. But science students accept theories on the authority of teacher and text, not because of evidence." (80)

Kuhn, Thomas. S. *The Structure of Scientific Revolutions*. University of Chicago Press, 2012. © University of Chicago Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see https://ocw.mit.edu/help/faq-fair-use/.

Is this an acceptable paraphrase?

“Normal science always tries to make theory and fact agree; for example, scientists test theories and try to confirm or deny them. Students of science, though, don’t test the evidence but just take the theories as true based on the authority of their teachers (80).”

Is this an acceptable paraphrase?

“Because he’s interested in how scientific revolutions occur, Kuhn compares how normal scientists and students learn. Normal scientists, he claims, constantly work to make their theories fit the evidence, testing, confirming, and falsifying their ideas, but students don’t work like normal scientists; instead, they ignore the evidence due to their concern for their teachers’ authority (80).”

Is this an acceptable paraphrase?

“Thomas Kuhn identifies an incongruity between how “normal science” works and how students learn to become scientists. Students learn scientific theories by listening to their professors and reading their textbooks, he points out, rather than by actively questioning and assessing the fit between theory and reality themselves (80).”

Questions?

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