Lecture 4
Common sense reasoning and political communication: An overview

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Asad Sayeed & Ellen Breitholtz

Picking up from Tuesday…

- Mental associations basis of priming and framing
  - ”A society’s culture provides the basic terms and ways of interpreting the world”
- ”…information activates preexisting associated knowledge in the mind of the recipient, making it more accessible for interpretation
- When deciding between competing frames speakers must consider what is normal and acceptable for the audience.
- Implicitly communicated information accepted more easily

Actually, this also happens in dialogue

- Different dialogue participants draw different conclusions from a single utterance
  - …reflecting the resources of their memory as well as what is salient to them in the context.
  - a central and pervasive feature of interaction
  - made visible to us for example through processes of repair [Clark1994, McRoy and Hirst1995]

A conversation between father and son

Dave:	you're gonna be home from football until four, you gonna have your dinner, want a bath.
Lee:	Yeah, but I might not go to school tomorrow.
Dave :	Why?
Lee:	Cos of my cough.
Dave:	How can you play football and not go to school then?
Lee:	Cos I was going out in the fresh air, I'm alright when I'm out in the fresh air.
Dave:	So why aren't you going to school then?
Lee:	I'm in the class room all day dad.

BNC file KBE utterance 10554-10561

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Arguments in dialogue tend to be enthymematic

- Relying on what is ”in the mind” of the interlocutor/audience
- Dependent on context and therefore often negotiable and defeasible (unlike logical syllogisms)
- In order to be accepted, enthymemes must be underpinned by acceptable principles of reasoning
- facts (or beliefs) and principles of reasoning warranting the applicability (and acceptability) of the argument.

- These warrants are sometimes referred to as *topoi*

Enthymemes in Aristotelian rhetoric

- belong to the logos-part of discourse, concerned with content and reasoning.
- “rhetorical syllogism”.
  - the conclusion of a syllogism is non-negotiable (necessary)
- Enthymemes are dependent on context and background knowledge (or beliefs), and therefore often negotiable and defeasible

Non-political monarchy

Anon 3: the monarchy are non political <pause >and therefore, when they choose to speak it's usually out of a genuine concern for that problem.

(BNC, FLE 233)

An Enthymematic argument

The monarchy are non political

when they choose to speak it's out of genuine concern

...warranted by

$$\frac{\text{The monarchy are non political}}{\text{when they choose to speak it's out of genuine concern}}$$

Warranted by:

- x is non political $\rightarrow$ x speaks out of genuine concern

Rules of thumb for (rhetorical) reasoning

- Aristotle:
    - *”Topoi are “places” where a speaker can find ideas on which to build his argument”*
- Particualar to some topic, like biology, or
- ”Common” (universal), e.g. ”the topos of the more and the less”

Topos of the more and the less

- You ran the Berlin Marathon – of course you can run 10 k!

Topos of the more and the less

- You ran the Berlin Marathon – of course you can run 10 k!

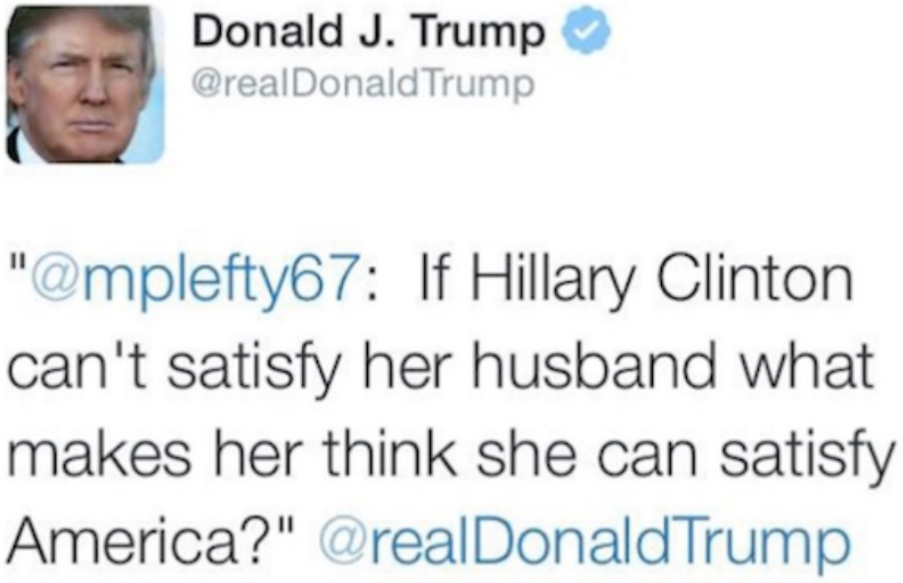
- Reasonable enough…

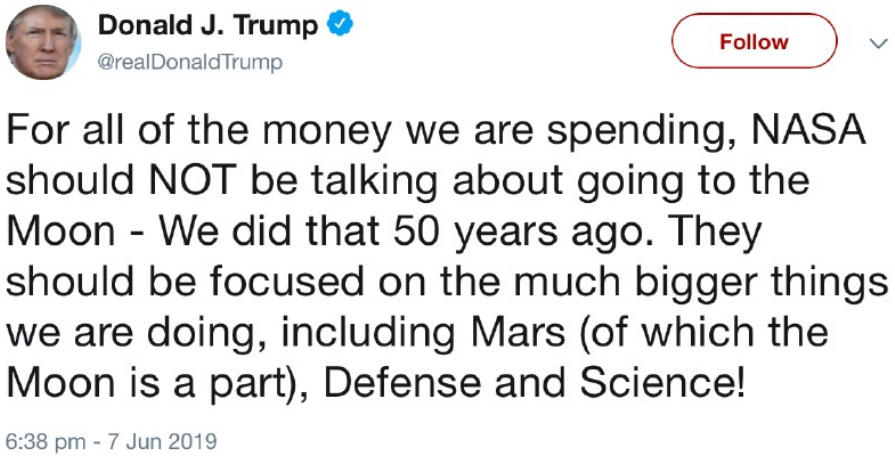
Topos of the more and the less

- You ran the Berlin Marathon – of course you can run 10 k!

- Reasonable enough…
- …but maybe you were 25 when you did that and you are now 80?

Topos of the more and the less (?)





A more specific topos

Politician: *“I love freedom – therefore I will lower taxes”*

- counts on the audience accepting this argument based on a notion that lower taxes are associated with a higher degree of freedom…
- …or a more general principle of reasoning – that having more money increases your freedom (and if you pay less tax you will have more money)

Topoi in Linguistics

- Ducrot (1980, 1988) and Anscombre (1995):

” *If one utterance is an assertion or a suggestion, exhortation, etc., and the other an assertion which functions as a support for the first, there is always some link which sanctions the interpretation of these utterances as an argument*.”

Topoi in Linguistics cont.

- The same topos may be used in different situations and contexts, and different topoi may apply in a particular situation:

  “Give a coin to the porter, he carried the bags all the way here”

  - The principle that work should be rewarded is generally accepted in our society, however, we could easily imagine:

  “Don’t give a coin to the porter - he just did his job” (and you should not get a tip just for doing what you are already payed to do

Topoi in Linguistics cont.

- Contrary to the rules of a logic, topoi do not constitute a monolithic system
  - Principles like “opposites attract” and “Birds of a feather flock together” may co-exist in the set of topoi of an individual
  - It is possible to agree with both of these principles, even though they may lead to inconsistent conclusions.
  - Topoi are gradual – the more the antecedent is true, the more the consequent is true.

Topoi and implicatures

- We need access to an underpinning topoi to actually arrive at an interpretation.
    - if the contribution does not contain enough information to point us in the direction of a relevant topos, an assumption of relevance is not enough for communicative success

      A : I'm out of petrol

      B : There's a garage around the corner

- in dialogue, this often leads to clarification requests
- A : What do you mean garage – I need to buy petrol?
- B : They sell petrol
- A : ah – ok!

- From this exchange B may retrieve a tentative topos regarding garages and petrol.

Modeling enthymemes and topoi

- Dialogue gameboards (Ginzburg, 2012, etc.)
- Information State update (Traum & Larsson, 2003)
- *Used by agents to keep track of where they are in the creation of a dialogue event*
  - *a project like finding out something*
  - *dialogue move like asking, responding, etc.*
- *Each agent has their own view of the shared state of the game (not god's eye view)*
  - *plays an essential role in coordination*

Dialogue gameboards as types in TTR

- TTR, a type theory with records (Cooper, 2005, 2012;Ginzburg, 2012)
  - Basis: Our ability to perceive and classify the world, i. e. to perceive objects and situations in the world as being of types
  - Some types in TTR:
  - *Ind*, the type of objects such as humans, animals, things (e)
  - ptypes, consisting of a predicate and its arguments, for
    - example see(a,b), “a sees b”.
- In order to represent complex situations which potentially involve many ptypes and individuals, as well as other more general types, we use *record types*.

Record Types

- *A record type is a structure of pairs of labels and types.*
  - *Labels may represent things like individuals, predicates and events.*
- The object to which the label *x* points is of type *Ind*
  - There are two constraints on the type of situation, that this individual is a dog (cdog :dog(*x*)) *and that it runs (crun:run(x))*.
  - *Fields can also be manifest, that is, a label points to a specific individual*

$$\begin{bmatrix} x{:}\mathit{Ind} \\ c_{dog}{:}\mathrm{dog}(x) \\ c_{run}{:}\mathrm{run}(x) \end{bmatrix} \qquad \begin{bmatrix} x{=}\mathrm{fido}{:}\mathit{Ind} \\ c_{dog}{:}\mathrm{dog}(x) \\ c_{run}{:}\mathrm{run}(x) \end{bmatrix}$$

Records

- In addition to record types we also want to be able to talk about situations that are witnesses of record types.
- We represent such objects as records.
- A record is a structure where the labels are associated with values rather than types.

$$\begin{bmatrix} \mathrm{x} & = \mathrm{fido} \\ \mathrm{c}_{dog} & = s_1 \\ \mathrm{c}_{run} & = s_2 \end{bmatrix} \text{ is a witness of } \begin{bmatrix} \mathrm{x}:\mathit{Ind} \\ \mathrm{c}_{dog}:\mathrm{dog}(\mathrm{x}) \\ \mathrm{c}_{run}:\mathrm{run}(\mathrm{x}) \end{bmatrix}$$

Enthymemes and topoi as types in TTR

- Topoi and enthymemes are modelled as functions from records to record types
  - Intuitively: If we have a situation of a particular type, we can predict a certain type of situation:

”Let’s take Walnut Street - it’s shorter [than Maple Street]” (Walker, 1996)

- Given a situation where one route is shorter than another, we predict a situation where the shortest route is chosen

Enthymemes and topoi as types in TTR

$$\tau = \lambda r: \begin{bmatrix} \mathsf{x}:\mathit{Ind} \\ \mathsf{y}:\mathit{Ind} \\ \mathsf{c}_{\mathrm{route}}:\mathsf{route}(\mathsf{x}) \\ \mathsf{c}_{\mathrm{route}_1}:\mathsf{route}(\mathsf{y}) \\ \mathsf{c}_{\mathrm{shorter\_than}}:\mathsf{shorter\_than}(\mathsf{x},\ \mathsf{y}) \end{bmatrix} . \left[\mathsf{c}_{\mathrm{choose}}:\mathsf{choose}(r.\mathsf{x})\right]$$

$$\epsilon = \lambda r: \begin{bmatrix} \mathsf{x}{=}\text{Walnut St.}:\mathit{Ind} \\ \mathsf{y}{=}\text{Maple St.}:\mathit{Ind} \\ \mathsf{c}_{\mathrm{route}}:\mathsf{route}(\mathsf{x}) \\ \mathsf{c}_{\mathrm{route}_1}:\mathsf{route}(\mathsf{y}) \\ \mathsf{c}_{\mathrm{shorter\_than}}:\mathsf{shorter\_than}(\mathsf{x},\ \mathsf{y}) \end{bmatrix} . \left[\mathsf{c}_{\mathrm{choose}}:\mathsf{choose}(r.\mathsf{x})\right]$$

A dialogue gameboard for rhetorical reasoning

$$\begin{bmatrix} \text{private:} & \begin{bmatrix} \text{agenda:list}(\textit{RecType}) \\ \text{topoi:list}(\textit{Topos}) \end{bmatrix} \\ \text{shared:} & \begin{bmatrix} \text{eud:list}(\textit{Enthymeme}) \\ \text{L-M:}\textit{Rec} \\ \text{topoi:list}(\textit{Topos}) \end{bmatrix} \end{bmatrix}$$

- *Shared: Information that the agent* **takes to be** *shared*
  - *it has been explicitly referred to in the dialogue*
  - *it has been accommodated*

Accommodation of topoi

- Lewis (1979); Karttunen, (1974); Stalnaker (1974).

- In the context of dialogue modeling, we think of accommodation as adding a topos to the shared DGB

- Activating a salient topos (adding it to the DGB)
- Infer a topos
  - tentatively add it to the model
  - question it

Accommodation of topoi

A: I'm going to take a, a roller ⟨pause⟩ these very expensive, very classy rollers.

A: ⟨cough⟩ Much higher quality than the bioprinting [sic] rollers that we may be used to using.

A: And therefore they must be carefully looked after.

[BNC: F77 341 - 343]

Accommodation of topoi cont.

- Enthymeme conveyed:

These are expensive, classy rollers

They must be carefully looked after

- Topos evoked: x is expensive $\rightarrow$ x should be carefully looked after

$\epsilon_{rollers}$ and $\tau_{expensive\_things}$

$$\epsilon = \lambda r{:}\ \begin{bmatrix} \mathsf{x}{=}\mathsf{rollers}{:}\mathit{Ind} \\ \mathsf{c}_{\mathit{expensive}}{:}\mathsf{expensive}(\mathsf{x}) \\ \mathsf{c}_{\mathit{classy}}{:}\mathsf{classy}(\mathsf{x}) \end{bmatrix} \cdot \left[\mathsf{s}{:}\mathsf{should\_be\_looked\_after}(r.\mathsf{x})\right]$$

$$\tau = \lambda r{:}\ \begin{bmatrix} \mathsf{x}{:}\mathit{Ind} \\ \mathsf{c}_{\mathit{expensive}}{:}\mathsf{expensive}(\mathsf{x}) \end{bmatrix} \cdot \left[\mathsf{s}{:}\mathsf{should\_be\_looked\_after}(r.\mathsf{x})\right]$$

Update rule

- Update rule $\mathcal{F}_{integrate\_shared\_topos} =$

$$\lambda r{:}\begin{bmatrix}\text{private}{:}\left[\text{topoi}{:}\text{list}(\mathit{topos})\right]\\ \text{shared}{:}\begin{bmatrix}\text{eud}{:}\text{list}(\mathit{Enthymeme})\\ \text{topoi}{:}\text{list}(\mathit{Topos})\end{bmatrix}\end{bmatrix}\cdot$$

$$\lambda e{:}\begin{bmatrix}\text{t}{:}\mathit{Topos}\\ \text{c}_1{:}\text{in}(\text{t},\ r.\text{private.topoi})\\ \text{c}_2{:}\text{specification}(\text{fst}(r.\text{shared.eud}),\ \text{t}))\end{bmatrix}\cdot$$

$$\left[\text{shared}{:}\left[\text{topoi}{=}[e.\text{t}\mid r.\text{shared.topoi}]{:}\text{list}(\mathit{Topos})\right]\right]$$

Accommodating a familiar topos

Assume that B's IS is a r:

$$\left[\begin{array}{l}\text{private:}\left[\text{topoi}=[\tau_{expensive\_things}]:\text{list}(\mathit{Topos})\right]\\ \text{shared:}\left[\begin{array}{l}\text{eud}=[\epsilon_{rollers},\ \epsilon_1]:\text{list}(\mathit{Enthymeme})\\ \text{topoi}=[\tau_1]:\text{list}(\mathit{Topos})\end{array}\right]\end{array}\right]$$

$$\mathcal{F}_{integrate\_shared\_topos}(r) =$$

$$\left[\text{shared:}\left[\begin{array}{l}\text{eud}=[\epsilon_{rollers},\ \epsilon_1]:\text{list}(\mathit{Enthymeme})\\ \text{topoi}=[\tau_{expensive\_things}\mid\tau_1]:\text{list}(\mathit{Topos})\end{array}\right]\right]$$

since $\epsilon_{rollers}$ is a specification of $\tau_{expensive\_things}$

Specification

Assume $\tau = \lambda r : T_1 \cdot T_2$ and
$\epsilon = \lambda r : T_3 \cdot T_4$

specification(ϵ,τ) is witnessed iff
$T_3 \sqsubseteq T_1$ and
for any r, $\epsilon(r) \sqsubseteq \tau(r)$

Topoi as components of personae

- Topoi are established in the resources of an individual through experience and interaction with other agents
- Thus, a speaker's argumentation may indicate which topoi are acceptable to the speaker or in a community
  - continuously re-evaluated, specified and generalised develops to be compatible with experience (input)
  - Rosengren (2001) argues that

    ”to define a culture is to define its topoi"
  - Analogous to this, topoi could be one way of defining individuals, or types of individuals

Social meaning

- Work by Burnett (2019, etc.) on how social meaning can be understood in terms of projected and perceived personae
  - socio-phonetic variation: English progressive form phoneme "-ing" pronounced "-ing" or "-in"
- Not only phonetic or grammatical choices but also other types of variation are associated with social meaning (Henderson & McCready, 2024).
  - The way an agent argues to reach a particular conclusion
  - What an agent assumes is accommodated in an interaction based on what is explicit in the discourse.
- We suggest that such variation is related to the topoi available to an agent involved in interaction.

The ballon task

- 39 C: Well I'm not throwing a kid out [I just couldn't cope with it].
- 42 A: And the other thing is I mean what what what she achieves er in her life if she becomes as famous as famous as Mozart erm will go on er [forever]=
- 45 A: So I mean the person it seems like the person with least value is the pregnant woman.
- 48 B: [she's] pregnant.
- 51 B: [So you're] killing two people instead of one.
- 52 C: Yhh and another thing is would he be able to pilot the balloon if his wife is overboard?

Three arguments

- "Throwing out a child is unbearable"
- "The prodigy will achieve great things and should thus not be thrown out"
- "If you throw out the pregnant woman, you are killing two people!"

Three topoi

- τ_1: x is a child $\rightarrow$ don't sacrifice x
- τ_2: x may achieve great things $\rightarrow$ don't sacrifice x
- τ_3: There is a choice between sacrificing n people and $n + 1$ people $\rightarrow$ sacrifice n people

How are these related to personae?

open question…

- many relevant topoi even in a limited domain
- topoi are on different levels of abstraction (
  - the very general ones might not provide much information

Personae as sets of topoi

- τ_1: x is a child $\rightarrow$ don't sacrifice x
- τ_2: x may achieve great things $\rightarrow$ don't sacrifice x
- τ_3: There is a choice between sacrificing n people and $n+1$ people $\rightarrow$ sacrifice n people

  - $\{\tau_1, \tau_2\}$ "The virtue ethicist"
  - $\{\tau_1, \tau_3\}$ "The humanist"
  - $\{\tau_2, \tau_3\}$ "The cold rationalist"

Integrating persona on the DGB

$$
\left[\begin{array}{l}
\text{private}: \left[\text{participants}: \left[\begin{array}{l}
\text{A}: \left[\begin{array}{l}\text{x}{=}\text{shared.participants.A}{:}\mathit{Ind}\\ \text{pd}{:}\mathit{PersDistr}\end{array}\right]\\
\text{B}: \left[\begin{array}{l}\text{x}{=}\text{shared.participants.}{:}\mathit{Ind}\\ \text{pd}{:}\mathit{PersDistr}\end{array}\right]
\end{array}\right]\right]\\
\text{shared}: \left[\text{participants}: \left[\begin{array}{l}\text{A}{:}\mathit{Ind}\\ \text{B}{:}\mathit{Ind}\end{array}\right]\right]
\end{array}\right]
$$

Integrating persona on the DGB

- Initial probabilities: the virtue ethicist: 0.3, the humanist: 0.4, the cold rationalist: 0.3

$$\left[\begin{array}{l} \text{pr}: \left[\text{A}: \left[\begin{array}{l} \text{x}=\text{shared.participants.A}:\mathit{Ind} \\ \text{pd}=\{ \left[\begin{array}{l}\text{p} \quad =\{\tau_1,\tau_2\}\\ \text{prob}=0.3\end{array}\right], \left[\begin{array}{l}\text{p} \quad =\{\tau_1,\tau_3\}\\ \text{prob}=0.4\end{array}\right], \left[\begin{array}{l}\text{p} \quad =\{\tau_2,\tau_3\}\\ \text{prob}=0.3\end{array}\right] \}:\mathit{PersDistr} \end{array}\right]\right] \\ \text{sh}: \left[\begin{array}{l} \text{topoi}: \left[\begin{array}{l}\text{prev}:\mathit{RecType}\\ \text{curr}: \left[\begin{array}{l}\text{topos}:\mathit{Topos}\\ \text{speaker}:\mathit{Ind}\end{array}\right]\end{array}\right] \\ \text{participants}: \left[\begin{array}{l}\text{A}:\mathit{Ind}\\ \text{B}:\mathit{Ind}\end{array}\right] \end{array}\right] \end{array}\right]$$

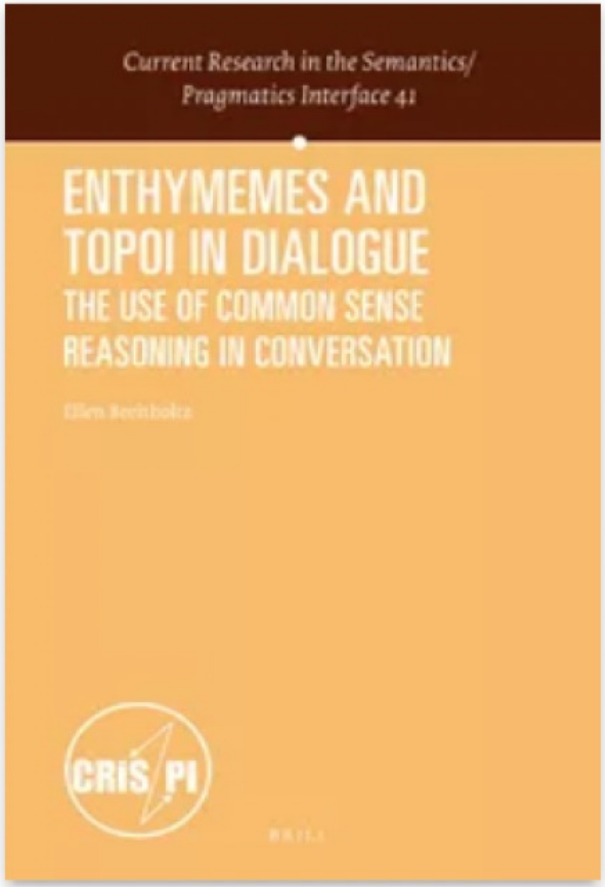
Integrating persona on the DGB

- When a topos τ occurs, then for all records $r \in$ pr.A.persdistr such that $\tau \in r$.p, increase r.prob

$$\left[\begin{array}{l} \text{pr:} \left[\text{A:} \left[\begin{array}{l} \text{x=shared.participants.A:}\mathit{Ind} \\ \text{pd=}\{\left[\begin{array}{l}\text{p}\quad=\{\tau_1,\tau_2\}\\ \text{prob=0.15}\end{array}\right], \left[\begin{array}{l}\text{p}\quad=\{\tau_1,\tau_3\}\\ \text{prob=0.5}\end{array}\right], \left[\begin{array}{l}\text{p}\quad=\{\tau_2,\tau_3\}\\ \text{prob=0.35}\end{array}\right]\ \}\text{:}\mathit{PersDistr}\end{array}\right]\right] \\ \text{sh:} \left[\begin{array}{l} \text{topoi:} \left[\begin{array}{l}\text{prev:}\mathit{RecType}\\ \text{curr:} \left[\begin{array}{l}\text{topos=}\tau_3\text{:}\mathit{Topos}\\ \text{speaker=participants.A:}\mathit{Ind}\end{array}\right]\end{array}\right] \\ \text{participants:} \left[\begin{array}{l}\text{A:}\mathit{Ind}\\ \text{B:}\mathit{Ind}\end{array}\right]\end{array}\right]\end{array}\right]$$

Summing up

- Persuasion and manipulative behaviour as used in politics, etc. is supervenient on interaction in general
- All topoi are not equally accessible to everyone in any situation
- As cultures change, so do topoi
- Relating personae and topoi – Ideology?
- Extending the account of how social meaning can be integrated in a theory of dialogue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ENTHYMEMES AND
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