

Outline

- ① Expressive Communication
- ② Previous Approaches
- ③ Dynamic Expressivism

Dynamic Expressivism

Philosophical Motivations and Empirical Applications

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April 10th, 2017

Expressing Attention

Donuts, Kittens and Pointing



One Expressivist Thesis

A Negative Thesis About Communication

Communication (Gibbard 1986: 473)

“To express a state of mind is not to say that one is in it”

- ‘Express’ best understood in terms of communication
- Broad appeal in the study of language and communication
- Radical but plausible departure from Gricean model
- Replace distinctions ‘in the world’ with psych. ones
 - But keeps **subject matter non-psychological**

Expressivist Theses

In Metaethics Literature

Communication (Gibbard 1986: 473)

“To express a state of mind is not to say that one is in it”

Explanation (Silk 2015: §1)

“The semantic properties of sentences are to be explained, fundamentally, in terms of properties of the attitudes conventionally expressed by utterances of those sentences”

Non-Representation (Hare, Ayer, a.o.)

The states of mind expressed by sentences are non-representational, and, more specifically, motivational.

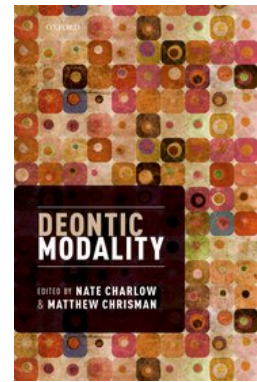
Starr 2016

In *Deontic Modality* eds. Charlow & Chrisman, OUP.

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Dynamic Expressivism about Deontic Modality

William B. Starr



Which Thesis is Primary?

Argument from Starr 2016a — see also Schroeder 2008

Communication is Primary

Example: (1) “Zoyd must share” vs. (2) “Zoyd is human”

- ① Can Explanation be true without Communication?
 - Suppose expressing one’s preference for sharing describes oneself as preferring sharing.
- ② Then preferences feature in semantic explanations of (1) exactly as human-ness does in explanations of (2).
 - (2) & ¬(2) inconsistent because of how human/non-human distinction is drawn.
 - (1) & ¬(1) inconsistent because of how distinctions among preferences are drawn.
- ③ Explanation cannot be true w/o Communication!

Expressivist Theses

In Metaethics Literature

Communication (Gibbard 1986: 473)

“To express a state of mind is not to say that one is in it”

Explanation (Silk 2015: §1)

“The semantic properties of sentences are to be explained, fundamentally, in terms of properties of the attitudes conventionally expressed by utterances of those sentences”

Claims

- ① Communication is logically prior to Explanation.
- ② This confounds recent attempts to align expressivism w/standard approaches in semantics and pragmatics

Expressivism

A Negative Thesis

Expressivist Thesis about Communication

One can **communicate** a state of mind without referring to that state of mind and applying distinctions to it.

The Challenge

- Expressivists owe a **positive** characterization
- After all, Communication is primary to Explanation
- I'll argue recent approaches do not provide adequate positive characterization
 - Yalcin 2012 and Silk 2015
 - Not discussed: Carballo & Santorio 2016

Possible Worlds and Information

In Inquiry and Communication (Stalnaker 1984)

- Propositions* are sets of worlds
 - Distinguish ways world might be (worlds in the set) from ways it isn't (worlds excluded from set)
- Rationality**: propositions are the objects of attitudes
- Communication**: contents 'transmitted' by assertions

Context Set (s) (Stalnaker 1978; Lewis 1979b)

As communication and inquiry unfold, a body of information accumulates. Think of this information as what the agents are mutually taking for granted. Call the set of worlds embodying this information s .

Gaining Information

And Eliminating Possibilities

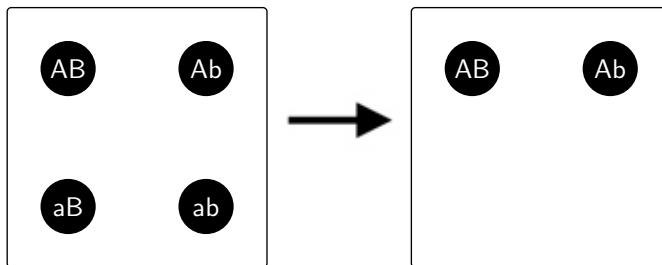


Figure: Accepting the information that A

- Inquiry progresses by using information to reduce uncertainty, i.e. eliminate worlds.
- $\{w_{AB}, w_{Ab}, w_{aB}, w_{ab}\} \Rightarrow \{w_{AB}, w_{Ab}\}$

Explaining Inconsistency

Representational Orthodoxy

Explaining Representational Inconsistency

Defective nature of simultaneously believing/asserting inconsistent sentences:

- Semantic values represent the world
- The **function** of asserting/believing sentences is to represent the world
- Semantic inconsistency = empty overlap, because \emptyset models a dysfunctional assertion/belief.

Modal Orthodoxy

May = \diamond , Must = \square

Orthodox Possible Worlds Semantics

- 1 $\llbracket A \rrbracket = \{w \mid w(A) = 1\}$
- 2 $\llbracket \neg\phi \rrbracket = W - \llbracket \phi \rrbracket$, $\llbracket \phi \wedge \psi \rrbracket = \llbracket \phi \rrbracket \cap \llbracket \psi \rrbracket$, $\llbracket \phi \vee \psi \rrbracket = \llbracket \phi \rrbracket \cup \llbracket \psi \rrbracket$
- 3 $\llbracket \diamond\phi \rrbracket = \{w \mid \exists w' : \in R(w, w') \ \& \ w' \in \llbracket \phi \rrbracket\}$
 - $R(w, w')$: w' is 'accessible' from w
- 4 $\llbracket \square\phi \rrbracket = \{w \mid \forall w' : \in R(w, w') \ \& \ w' \in \llbracket \phi \rrbracket\}$
 - $R(w, w')$: w' is 'accessible' from w

Truth $w \models \phi \iff w \in \llbracket \phi \rrbracket$

Consequence $\phi \models \psi \iff \llbracket \phi \rrbracket \subseteq \llbracket \psi \rrbracket$

Consistency $\llbracket \phi \rrbracket \cap \llbracket \psi \rrbracket \neq \emptyset$

A Consequences of the Orthodoxy

Explaining Why $\square A$ and $\neg\square A$ are Inconsistent

Fact: $\llbracket \square A \rrbracket \cap \llbracket \neg\square A \rrbracket = \emptyset$

- Fact taken to explain why asserting/believing both is dysfunctional/irrational
- **Assumption 1:** function of assertion/belief is to represent how the world is
- **Assumption 2:** $\llbracket \cdot \rrbracket$ is the representation relation
- **Explanation:** no world can be both how $\square A$ and $\neg\square A$ represent the world as being, so it is dysfunctional to assert/believe both
- Do deontic modal claims represent 'modal reality'?

Deontic Discourse

And Motivation



Cyanide and Happiness © Explosm.net

The Catch of Expressivism

What *is* Expressing a State of Mind without Describing It?

The Negation Problem

What states of mind do **Must A**, **Must $\neg A$** , and **\neg Must A** express such that jointly asserting/believing **Must A** and either **Must $\neg A$** or **\neg Must A** is dysfunctional?

- Gibbard (2003: 71-5) tries to live without a positive answer to this question
 - Consensus: you can't (Dreier 2006, 2009; Silk 2015)
- Silk (2015) and Yalcin (2012) try to adapt truth-conditional semantics to the task
- Starr (2016a): these attempts either lapse back in to descriptivism or fail to solve the problem fully

Preference Expressivism

Silk 2015 building on Dreier 2006, 2009

Preference Expressivism (Silk 2015)

Where $Best(\lesssim) = \{w \mid \forall w': w \lesssim w' \text{ if } w' \lesssim w\}$:

- 1 $\llbracket \text{Must}(\phi) \rrbracket_{w, \lesssim} = 1 \iff \forall w' \in Best(\lesssim): \llbracket \phi \rrbracket_{w', \lesssim} = 1$
 - $\text{Must}(\phi)$ is true at w, \lesssim iff all the worlds best according to \lesssim are ϕ -worlds.
- 2 $\llbracket \text{May}(\phi) \rrbracket_{w, \lesssim} = 1 \iff \exists w' \in Best(\lesssim): \llbracket \phi \rrbracket_{w', \lesssim} = 1$
 - $\text{May}(\phi)$ is true at w, \lesssim iff some world best according to \lesssim is a ϕ -world.

- Silk 2015: this vindicates Explanatory thesis

Expressing Preferences

Building Preference Relations

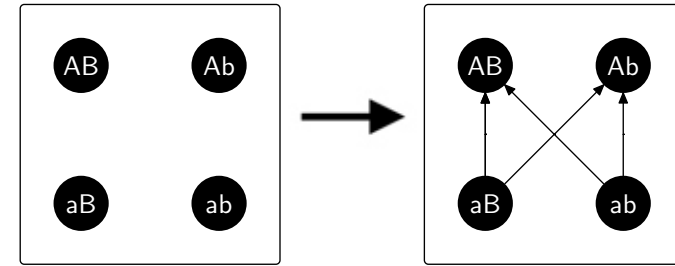


Figure: Preferences Expressed by Must A

- $\langle s_0, \emptyset \rangle \Rightarrow$
 $\langle s_0, \{\langle w_{AB}, w_{aB} \rangle, \langle w_{AB}, w_{ab} \rangle, \langle w_{Ab}, w_{aB} \rangle, \langle w_{Ab}, w_{ab} \rangle\} \rangle$

Expressing Preferences

Building Preference Relations

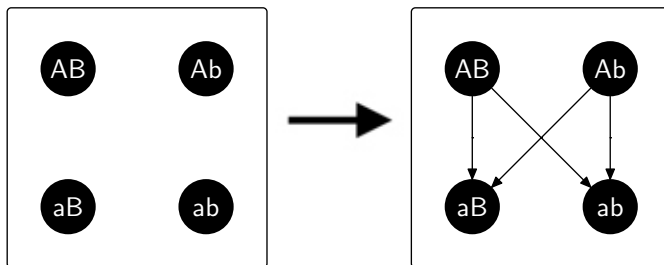


Figure: Preferences Expressed by Must -A

Expressing Preferences

Explaining One Inconsistency (Dreier 2006; Starr 2016b; Silk 2015)

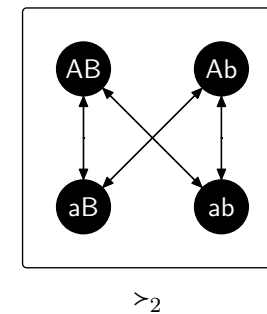


Figure: Preferences Expressed by Must -A and Must -A

- Negation problem solved:
 - 1 Function of deontics is to motivate choice
 - 2 $\text{Choice}(s^{>2}) = \emptyset$, i.e. no alternative can be chosen
 - 3 So dysfunctional to assert/believe

What It's Like



More Negation

The External Negation Problem?

- Inconsistency of **Must A** and **Must ¬A** explained!
- But what about **Must A** and **¬Must A**?
- Silk 2015: $\llbracket \text{Must } A \rrbracket \cap \llbracket \neg \text{Must } A \rrbracket = \emptyset$

The Problem

- This explanation is completely different!
- Doesn't appeal to motivational function of preferences.
- Combining preferences expressed by **Must A** and **¬Must A** isn't motivationally dysfunctional

Alternative Model of Expressing Preferences

External Negation

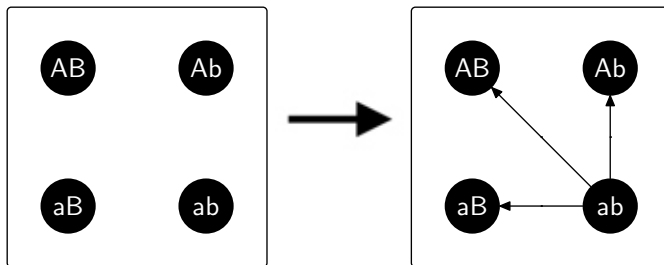
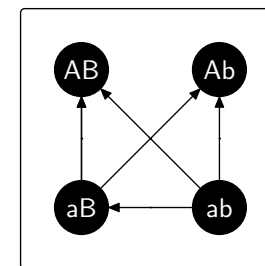


Figure: Preferences Expressed by $\neg \text{Must } A$?

- What semantics for \neg would deliver this?
- Not the orthodox one! (Frege 1923)

Alternative Model of Expressing Preferences

The Other Inconsistency, Not Explained



$>_3$

Figure: Preferences Expressed by **Must A** and $\neg \text{Must } A$

- Same explanation of inconsistency doesn't work!
- $\text{Choice}(s^{>3}) = \{w_{AB}, w_{Ab}\}$

Pragmatic Expressivism

And Its Limitations

- Expressive/representational communication distinguished
 - Contents go in different boxes!
- But the process of updating boxes is formally identical
 - Eliminating points from a set

The Problem

- To capture update of hybrid sentences you have to eliminate ‘two box’ approach
 - $A \wedge \text{Must } B, A \vee \text{Must } B$
 - Move to single set of points like $\langle w, \approx \rangle$
- Eliminating points like $\langle w, \approx \rangle$ from single space is indistinguishable from relativist/subjectivist approach

Pragmatic Expressivism Yalcin 2012

- 1 A descriptive sentence ϕ , expresses a constraint on how the world can be, i.e. the set of left-indices that make it true:
 $\llbracket \phi \rrbracket = \{w \mid \exists \approx: \llbracket \phi \rrbracket_{w, \approx} = 1\}$
- 2 An expressive deontic sentence ϕ , expresses a constraint on preferences, i.e. the set of right-indices that make it true:
 $\llbracket \phi \rrbracket = \{\approx \mid \exists w: \llbracket \phi \rrbracket_{w, \approx} = 1\}$
- 3 Common ground: $C = \langle s_C, P_C \rangle$, where
 $s_C = \{w_0, \dots, w_n\}, P_C = \{\approx_0, \dots, \approx_m\}$
 - Background assumption: s_C is the ways the world could be given what the agents’ are taking for granted
 - Background assumption: P_C is the preferences compatible with the situations the agents’ are in favor of
- 4 Representational communication: $C \upharpoonright \phi = \langle s_C \cap \llbracket \phi \rrbracket, P_C \rangle$
- 5 Expressive communication: $C \upharpoonright \phi = \langle s_C, P_C \cap \llbracket \phi \rrbracket \rangle$

Basic Dynamic Semantics

Just Information (Veltman 1996)

Orthodox Picture

- Sentences represent by refer to regions of logical space
- Interpreters use utterances of them to shift to region of logical space within region referred to

Dynamic Semantics (Purely Informational Version)

- Sentences: recipes for moving around logical space
- Atomics: zoom in on a particular region
- Conjunction: apply each recipe in turn
- Disjunction: apply recipes separately; ‘merge’ results
- Negation: remove region scope would zoom to

The Dynamic Picture

In More Detail

The Basic Idea

Assign each ϕ a function $[\phi]$ encoding how it changes s :
 $s[\phi] = s'$ (I.e.: $[\phi](s) = s'$)

Dynamic Informational Semantics (Veltman 1996)

- 1 $s[A] = \{w \in s \mid w(A) = 1\}$
- 2 $s[\neg\phi] = s - s[\phi]$
- 3 $s[\phi \wedge \psi] = (s[\phi])[\psi]$
- 4 $s[\phi \vee \psi] = s[\phi] \cup s[\psi]$

A New Dynamic Picture

A Model of Competing Information and Preferences (Starr 2016a)

States S

S is a set of substates.

Substates s^{\succsim}

A substate s^{\succsim} is a triple consisting of:

- 1 s an information state, set of worlds
- 2 $>$ a preference ordering on worlds
- 3 \sim an indifference ordering on worlds

Notation: any set-theoretic operations applied to s^{\succsim} are really applied to s , e.g. $s_0^{\succsim} \cap s_1^{\succsim} := (s_0 \cap s_1)^{\succsim}$

A New Dynamic Picture

The Connective Semantics

Dynamic Connective Semantics (Starr 2016a)

- 1 $S[A]$: eliminate $\neg A$ -worlds from each substate
 - 2 $S[\neg\phi]$: for each substate,
 - a. Eliminate worlds that would survive update w/ ϕ
 - b. Remove preferences ϕ would add to empty ordering
 - 3 $S[\phi \wedge \psi] = (S[\phi])[\psi]$
 - 4 $S[\phi \vee \psi] = S[\phi] \cup S[\psi]$
- Disjunction will create substates for each disjunct

A New Dynamic Picture

Modal Semantics

Semantics for MustA

$S[\text{Must } A]$:

- Add strict preference for A -worlds over $\neg A$ -worlds
- Test that resulting preferences are rational
 - I.e. successfully motivate choosing an alternative
- Test will be failed if input state prefers $\neg A$ -worlds
 - Return information \emptyset if failed
- When test is passed, information stays the same

Towards a Logic

Two Kinds of Support

Informational Support

$S \models \phi \iff i_S = i_{S[\phi]}$

- $i_S = \bigcup \{s \mid \exists \succsim: s^{\succsim} \in S\}$

Preferential Support

$S \Vdash \phi \iff Pref_S = Pref_{S[\phi]}$

- $Pref_S = \{\succsim \mid \exists s \neq \emptyset: s^{\succsim} \in S\}$

Explaining Inconsistency

From an Expressivist Perspective

Informational Consistency

ϕ_1, \dots, ϕ_n are informationally consistent

$\iff \exists S: i_S \neq \emptyset \ \& \ S \models \phi_1, \dots, S \models \phi_n$

Preferential Consistency

ϕ_1, \dots, ϕ_n are preferentially consistent

$\iff \exists S: Ch(S) \neq \emptyset \ \& \ S \models \phi_1, \dots, S \models \phi_n$

- Where $Ch(S) = \bigcup \{ Choice(s, z) \mid s^z \in S \}$
- Recall: if $Choice(s, z) = \emptyset$ then z is dysfunctional, i.e. fails to motivate a choice.
 - E.g. if z is cyclic over s , $Choice(s, z) = \emptyset$

Explaining Inconsistency

Preferential Inconsistency (Starr 2016a)

- **Must** ϕ and **Must** $\neg\phi$ are preferentially inconsistent
 - Only irrational states support them, i.e. ones with cyclic preferences
- But **Must** ϕ and \neg **Must** ϕ are preferentially inconsistent in a different way — same for **May** ϕ and \neg **May** ϕ
 - If S contains preferences **Must** ϕ would add, \neg **Must** ϕ will remove them
 - If S doesn't contain any of the preferences \neg **Must** ϕ would remove, **Must** ϕ will add them back
- They are **dynamically** inconsistent: no single perspective can incorporate both simultaneously

Proceedings of SALT 26: 325–349, 2016

Expressing permission*

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Abstract This paper proposes a semantics for free choice permission that explains both the non-classical behavior of modals and disjunction in sentences used to grant permission, and their classical behavior under negation. It also explains why permissions can expire when new information comes in and why free choice arises even when modals scope *under* disjunction. On the proposed approach, deontic modals update preference orderings, and connectives operate on these updates rather than propositions. The success of this approach stems from its capacity to capture the difference between *expressing* the preferences that give rise to permissions and conveying propositions about those preferences.

Free Choice Permission

The Narrow Implication

Authoritative labor representative to union members:

- (1)
 - a. Members **may** vote for Anderson **or** Brady
 - b. Members may vote for Anderson and members may vote for Brady

Narrow Free Choice Permission (NFC)

$\text{May}(A \vee B) \Rightarrow \text{May} A \wedge \text{May} B$

- ‘ \Rightarrow ’: shorthand for ‘implication’, neutral between semantic consequence and pragmatic implicature (von Wright 1968: 4-5, Kamp 1973)

Free Choice Permission

Is Narrow Implication a Cancelable Implicature?

- Implication doesn't pass standard cancellation test

(2) *Authoritative labor representative:*

- Members may vote for Anderson or Brady
- #But members may not vote for $\left\{ \begin{array}{l} \text{Anderson} \\ \text{Brady} \end{array} \right\}$

Free Choice Permission

The Wide Implication

Authoritative labor representative to union members:

- Members **may** vote for Anderson **or** members **may** vote for Brady
 - Members may vote for Anderson and members may vote for Brady

Wide Free Choice Permission (WFC)

May A \vee May B \Rightarrow May A \wedge May B

- ' \Rightarrow ': shorthand for 'implication', neutral between semantic consequence and pragmatic implicature

(Kamp 1978: 273; Zimmermann 2000; Geurts 2005; Simons 2005)

Modal Orthodoxy

May = \diamond

Orthodox Possible Worlds Semantics

- $\llbracket A \rrbracket = \{w \mid w(A) = 1\}$
- $\llbracket \neg\phi \rrbracket = W - \llbracket \phi \rrbracket$
- $\llbracket \phi \wedge \psi \rrbracket = \llbracket \phi \rrbracket \cap \llbracket \psi \rrbracket$
- $\llbracket \phi \vee \psi \rrbracket = \llbracket \phi \rrbracket \cup \llbracket \psi \rrbracket$
- $\llbracket \diamond\phi \rrbracket = \{w \mid \exists w': \in R(w, w') \ \& \ w' \in \llbracket \phi \rrbracket\}$
 - $R(w, w')$: w' is 'accessible' from w

Classical Truth and Consequence

Truth $w \models \phi \iff w \in \llbracket \phi \rrbracket$

Consequence $\phi \models \psi \iff \llbracket \phi \rrbracket \subseteq \llbracket \psi \rrbracket$

Consequence of the Orthodoxy

Possibility and Disjunction

Fact 1: $\diamond A \vee \diamond B \neq \diamond(A \vee B)$ and $\diamond(A \vee B) \neq \diamond A$

- First would require:
 - $\llbracket \diamond A \rrbracket \cup \llbracket \diamond B \rrbracket \subseteq \llbracket \diamond(A \vee B) \rrbracket$
 - But this only holds when $\llbracket \diamond B \rrbracket = \emptyset$
- Second would require:
 - $\llbracket \diamond(A \vee B) \rrbracket \subseteq \llbracket \diamond A \rrbracket$
 - Would hold only when $\llbracket \diamond B \rrbracket = \emptyset$

- Orthodoxy doesn't explain NFC or WFC
- Un-orthodoxy: May $(A \vee B)$ is **semantically equivalent** to May $A \wedge$ May B (e.g. Geurts 2005; Simons 2005)

Dual Prohibition

Good for the Orthodoxy, Bad for the Un-orthodoxy

Authoritative labor representative to union members:

- (4) a. Members may not vote for Anderson or Brady
 b. Members may not vote for Anderson **and** members may not vote for Brady

Dual Prohibition (DP)

$\neg\text{May}(A \vee B) \Rightarrow \neg\text{May} A \wedge \neg\text{May} B$

(Alonso-Ovalle 2006; Fox 2007)

- Orthodox Explanation: $\neg\Diamond(A \vee B) \models \neg\Diamond A \wedge \neg\Diamond B$
- More unorthodox semantics or Unorthodox LF/Pragmatics?

Children's Knowledge of Free Choice Inferences and Scalar Implicatures

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Macquarie University

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Macquarie University

The Dilemma

Hard Choices

More Unorthodox Semantics

- 1 Aloni (2007)
 - Semantic explanation of NFC
 - Potential semantic explanation of DP
 - No account of WFC
- 2 Barker (2010)
 - Semantic explanation of NFC
 - Pragmatic explanation of DP
 - Evidence for pragmatic account of DP holds for NFC
 - Problematic account of WFC
- 3 Aher (2012); Willer (2015)
 - Semantic explanation of NFC, DP
 - No account of WFC

The Dynamic Picture

Extended to Deontics

Dynamics of Permissions π

May ϕ is analyzed dynamically in terms of how it updates requirements/permissions π , rather than information s . (Kamp 1973; Lewis 1979a; van Rooij 2000)

Novel Model of π

A **practical frame** π consists of:

- R_π : requirements, preferences between worlds
- P_π : strong permissions, preferences between worlds
- Sentences influence **substates** $s^\pi := \langle s, \pi \rangle$

Permission Dynamics

Substates Visualized

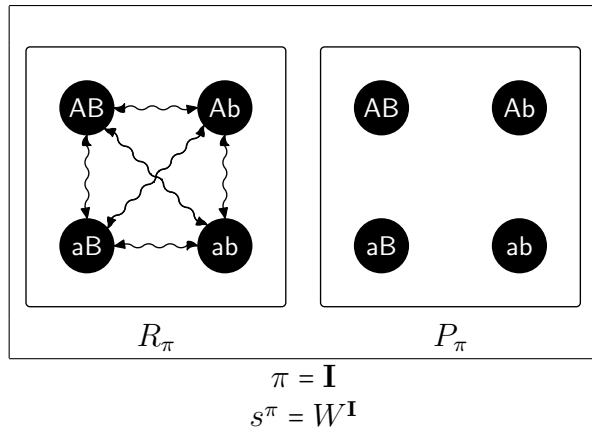
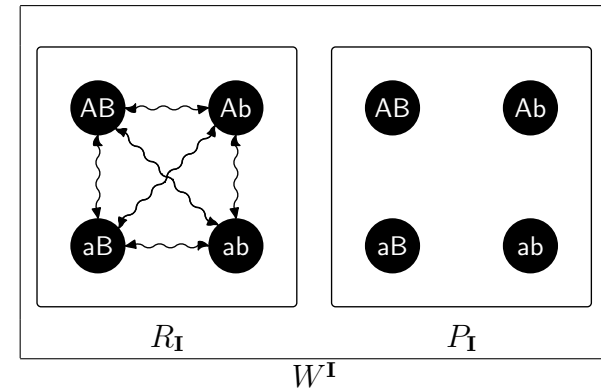


Figure: Initial Substate: No Info, Req's or Strong Permissions

- A not strongly permitted, but not forbidden

Permission Dynamics

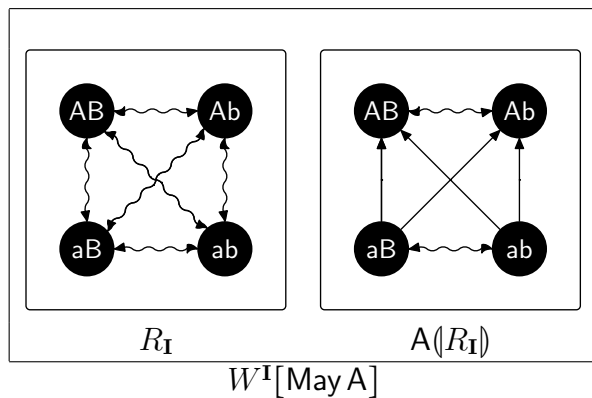
Expressing Permission, Simplified



- May A: test whether A is compatible w/ $R_{\mathbf{I}}$ -best worlds
 - Yes: create new P from $R_{\mathbf{I}}$, w/preference for A-worlds
 - No: reduce s to \emptyset

Permission Dynamics

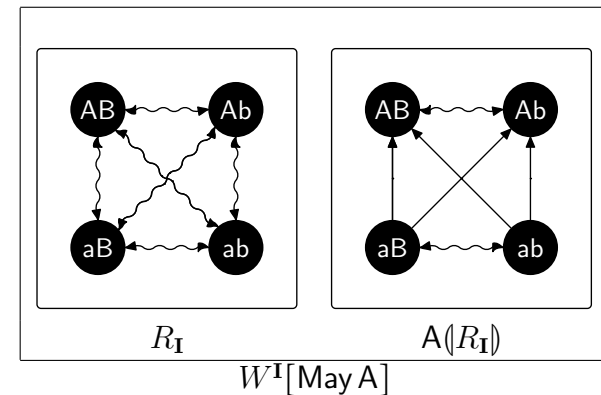
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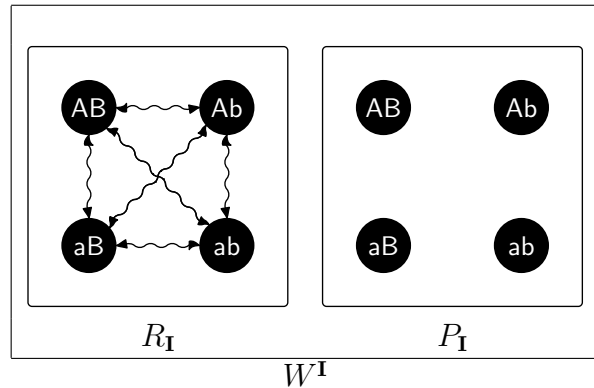
Expressing Permission, Simplified



- \neg May A: remove any preferences/info May A would add

Permission Dynamics

Expressing Permission, Simplified



- \neg May A: remove any preferences/info May A would add

Inconsistency, Expressivism and Negation

How Connected to Free Choice?

The Key Link

- To fully solve the negation problem:
 - 1 A distinctive theory of how preferences are expressed
 - 2 Semantics where negation operates on preferences and propositions
- Precisely that account of negation resolves the tension between Free Choice and Dual Prohibition
- When modals aren't involved connectives behave exactly like classical ones!

Conclusion

Open Ends

Varieties of Expressivism

- 1 Global vs. Local Expressivism
 - Caveat about non-modal language, and other kinds of modality
- 2 Psychological vs. Social
 - Do deontic modals motivate because they activate preferences?
 - Or because agents are responsive to each other's commitments?
 - Room for a hybrid answer...

Conclusion

Dynamic Expressivism

Summary

- 1 Positive theory of expressivist communication needed
 - Pre-req. for explanatory benefits of expressivism
- 2 Recent attempts do not meet this challenge
- 3 Dynamic semantics: linguistic meaning is characteristic role sentence plays in changing mental states
- 4 **Dynamic expressivism**: deontic modals update preferences
- 5 **Dynamic consistency**: there is a rational state that contains effects of both sentences

Thanks!

(Slides available at <http://williamstarr.net/dex5.pdf>)

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