The Conditional Fallacy

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Dispositions Workshop

The Conditional Analysis of Dispositions

Ryle on Dispositions

To say that this lump of sugar is soluble is to say that it would dissolve, if submerged anywhere, at any time and in any parcel of water. To say that this sleeper knows French, is to say that if, for example, he is ever addressed in French, or shown any French newspaper, he responds pertinently in French, acts appropriately or translates correctly into his own tongue. (*The Concept of Mind*, 123)

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The General Form

- Disposition *d*

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The General Form

- Disposition d
- Conditions of manifestation c
- Manifestation m
- Analysis: $\Box(d \equiv (c \Rightarrow m))$

Some Voices of Opposition

- The attempt to render dispositional claims in terms of counterfactual claims depends upon (i) providing an account of what needs to be the case for a counterfactual claim to be true or appropriate or correct; and when that is done, then (ii) it needs to be shown that it is sufficient for dispositions. This paper has been an argument for saying that there is no hope for the success of (ii). (C.B. Martin)

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- The simple conditional analysis has been decisively refuted by C.B. Martin. (David Lewis)
- Thanks to Charlie Martin, the conditional analysis . . . has long been known to be incorrect. (Alexander Bird)
- It is now widely agreed that the simple conditional account is mistaken. (Michael Fara)

Against Conditional Analysis

The Minor Problem

X is poisonous ≡ if X is ingested, X will cause death.

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X is poisonous ≡ if X is ingested, X will cause death.

But what if X is ingested together with an antidote?

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We need the **right** conditional of analysis.

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If *X* is ingested *by itself*, *X* will cause death.

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We need the **right** conditional of analysis.

If *X* is ingested *by itself*, *X* will cause death.

If *X* is ingested by itself on an empty stomach, *X* will cause death.

Against Conditional Analysis

The Minor Problem

The specifications both of the response and of the stimulus stand in need of various corrections. To take just one of the latter corrections: we should really say if ingested without its antidote. Yet the need for this correction to the analysis of poison *teaches no lesson about the analysis of dispositionality in general*. (Lewis, “Finkish Dispositions”)

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The heart of the minor problem: a **specific** conditional analysis of a disposition may be subject to counterexamples. This shows only that the specific proposal is wrong. It does not (and cannot) show that the *very idea* of conditional analysis is mistaken.

Against Conditional Analysis

The Major Problem: Finking

Consider now the following case. [A wire] is connected to a machine, an *electro-fink*, which can provide itself with reliable information as to exactly when a wire connected to it is touched by a conductor. When such contact occurs the electro-fink reacts (instantaneously, we are supposing) by making the wire live for the duration of the contact. In the absence of any contact the wire is dead.

. . . Consider a time when the wire is untouched by a conductor, for example t_1. *Ex hypothesi* the wire is not live at t_1. But the conditional ["If the wire were touched by a conductor, electrical current would flow from the wire to the conductor"] is true of the wire at t_1. (Martin, "Dispositions and Conditionals").

The Conditional Fallacy: First Glimpse

Another account counterexampled!

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Well, no. We want more than that.

We want a **general recipe** for producing counterexamples – thereby showing that the **very idea** of conditional analysis of dispositions fails.

An Unpalatable Recipe

Here's a general recipe for refuting conditional analyses:

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The Simple Fallacy

When you propose the analysis $\Box(d \equiv (c \Rightarrow m))$, I will observe the possibility of an object possessing dispositional property *d*, but not being such that it would *m* if it were *c*.

Some Rhetoric

Two **conjunctive analyses** of knowledge:

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Moral: Analyses of knowledge commit the **conjunctive fallacy**.

A General Recipe For a General Recipe

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Begin with a set Σ of sentences. Call this the *finking story*. We need two things:

1. **Inferential Condition**: Σ together with $\Box(d \equiv (c \Rightarrow m))$ entail some conclusion ϕ which makes some assertion about the disposition-possessing object.
2. **Possibility Condition**: Σ together with $\neg\phi$ form an independently plausible scenario.

A Specific Example of the General Recipe For a General Recipe

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- Σ is just $c \Rightarrow m$.
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The inferential condition is met trivially, but the possibility condition looks suspect (as a general claim).

Some Conditionals

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1. Material Conditional ($\supset$)
2. Strict Conditional ($\prec$3)
3. Stalnaker/Lewis Counterfactual ($\Box\!\!\rightarrow$)

The Material Conditional

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A	B	$A \supset B$
T	T	T
T	F	F
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$A \prec B$ is true iff:

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The Strict Conditional

The strict conditional is the necessitation of the material conditional.

$A \strictif B$ is true iff:

1. For every world w, $w \vDash A \supset B$.
2. For every world w, either $w \vDash \neg A$ or $w \vDash B$.
3. $[\![A]\!] \subseteq [\![B]\!]$.

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- w_1 and w_2 belong to the same sphere (relative to w) if $w_1 \preceq_w w_2$ and $w_2 \preceq_w w_1$.
- w_1 belongs to a smaller sphere (relative to w) than w_2 if $w_1 \preceq_w w_2$ but $w_2 \npreceq_w w_1$.

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$w \vDash A \mathrel{\Box\!\!\rightarrow} B$ iff $\exists u(u \Vdash (A \wedge B)$ and $\forall u' \preceq_w u\ u' \vDash (A \supset B))$.

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2. **Strong Centering**: The world w is the unique member of the smallest sphere in the sphere system around w. ($\forall u \neq w \; u \not\preceq_w w$).
   - Strong centering supports the inferential rule of **Strong Conditional Introduction**: $A, B \models A \;\Box\!\!\rightarrow B$.

A Hierarchy of Conditionals

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A Conditional Hierarchy

Strict Conditional

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Absent Stimulus Conditions

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Absent Stimulus Conditions

Suppose someone is highly disposed to talk, but there is no particular kind of situation that elicits this response in him. He is disposed to talk when happy, when sad, with others or by himselfhe is just generally loquacious. . . . Now, clearly there is a problem with providing a counterfactual account of such dispositions: we are at a loss for what to put in the antecedent of the counterfactual. (Manley and Wasserman)

Absent Stimulus Conditions

Trivial Antecedents

An obvious analysis:

- X is loquacious $\equiv$ ($\top \Rightarrow X$ talks).

Absent Stimulus Conditions

Manley and Wasserman against the **Trivial Antecedent** analysis:

Against Trivial Antecedents

The conditional ‘If he were in any situation at all, he would talk’ has two readings, neither of which will serve our purposes. On one reading it is too strong (requiring that every situation is such that he would talk in it) and another it is too weak (requiring only that he talk in the closest world in which any situation obtains; i.e. the actual world). (Manley and Wasserman)

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- $\Rightarrow$ could be the strict conditional. $\top \strictif A$ is equivalent to $\Box A$, so on this reading, loquacity requires talking in every possible world.
- $\Rightarrow$ could be the strongly centered Stalnaker/Lewis conditional. Given strong centering, $\top \boxright A$ is equivalent to A, so on this reading, loquacity requires only talking in the actual world.

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- $\Rightarrow$ could be the strict conditional. $\top \strictif A$ is equivalent to $\Box A$, so on this reading, loquacity requires talking in every possible world.
- $\Rightarrow$ could be the strongly centered Stalnaker/Lewis conditional. Given strong centering, $\top \boxright A$ is equivalent to A, so on this reading, loquacity requires only talking in the actual world.
- $\Rightarrow$ could be the material conditional. $\top \supset A$ is equivalent to A, so on this reading, loquacity requires only talking in the actual world.

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Moral: Don't evaluate conditional analysis with an impoverished supply of possible conditionals.

In Search of a Better Recipe

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Dispositional Mutability

Dispositions come and go, and we can cause them to come and go. (Lewis, "Finkish Dispositions")

Masking and Mimicking

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  - **Inferential Condition**: $\Box(d \equiv (c \Rightarrow m))$ and $c \Rightarrow d$ together entail d.
  - **Possibility Condition**: $\neg d$ and $c \Rightarrow d$ are compossible.

A Masking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $\neg(c \Rightarrow d)$	A
3. d	A (for reductio)
4. $c \Rightarrow m$	**Taut**, 1,3
5. $c \Rightarrow (c \Rightarrow m)$	?, 4
6. $\neg(c \Rightarrow (c \Rightarrow m))$	**Taut**, 1,2
7. $\neg d$	Reductio, 3,5,6

Expansion

To fill the gap on line 5, we need a rule of **Expansion**:

- **Expansion**: From $A \Rightarrow B$, infer $A \Rightarrow (A \Rightarrow B)$.

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Expansion and Strong Centering

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For a Stalnaker/Lewis conditional, **Expansion** is valid iff strong centering is imposed.

Assume strong centering. Assume $A \mathrel{\Box\!\!\rightarrow} B$. Let w be an arbitrary closest A world. Then B is true at w. Given strong centering, we have **Strong Conditional Introduction**, so A and B together entail $A \mathrel{\Box\!\!\rightarrow} B$. Hence $A \mathrel{\Box\!\!\rightarrow} B$ is true at w. So at all the closest A worlds, $A \mathrel{\Box\!\!\rightarrow} B$ is true. Therefore, $A \mathrel{\Box\!\!\rightarrow} (A \mathrel{\Box\!\!\rightarrow} B)$.

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Assume strong centering fails. Assume $A \mathrel{\Box\!\!\rightarrow} B$. Let w be an arbitrary closest A world. Suppose that in the minimal sphere around w there is another world u, and that at u, A holds but B fails. Then at w, $A \mathrel{\Box\!\!\rightarrow} B$ fails, since not all of the closest A worlds are B worlds. So $A \mathrel{\Box\!\!\rightarrow} (A \mathrel{\Box\!\!\rightarrow} B)$ fails, because not all of the closest A worlds are $A \mathrel{\Box\!\!\rightarrow} B$ worlds.

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3. d	A (for reductio)
4. $c \Rightarrow m$	**Taut**, 1,3
5. $c \Rightarrow (c \Rightarrow m)$	Expansion, 4
6. $\neg(c \Rightarrow (c \Rightarrow m))$	**Taut**, 1,2
7. $\neg d$	Reductio, 3,5,6

An Alternative Masking Argument

A Mimicking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow d$	A
3. $c \Rightarrow (c \Rightarrow m)$	**Taut**, 1,2
4. $c \Rightarrow m$	?, 3
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Contraction

To fill the gap on line 4, we need a rule of **Contraction**:

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Assume weak centering. Assume $A \mathrel{\Box\!\!\rightarrow} (A \mathrel{\Box\!\!\rightarrow} B)$. Let w be an arbitrary closest A world. Then $A \mathrel{\Box\!\!\rightarrow} B$ is true at w. But given weak centering, **Modus Ponens** holds. Since both A and $A \mathrel{\Box\!\!\rightarrow} B$ are true at w, we have B at w. Hence all the closest A worlds are B worlds, and we have $A \mathrel{\Box\!\!\rightarrow} B$.

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Contraction and Weak Centering

For a Stalnaker/Lewis conditional, **Contraction** is valid iff weak centering is imposed.

Assume weak centering fails. Suppose w is the unique closest A world to the actual world, and that B is false at w. Then $A \boxright B$ is false. But suppose u is the unique world in the minimal sphere about w, and that at u, both A and B are true. Then $A \boxright B$ is true at w. Hence $A \boxright B$ is true at all of the closest A worlds to the actual world, so $A \boxright (A \boxright B)$ is true.

A Mimicking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow d$	A
3. $c \Rightarrow (c \Rightarrow m)$	**Taut**, 1,2
4. $c \Rightarrow m$	Contraction, 3
5. d	**Taut**, 4

An Alternative Mimicking Argument

Collapsing Masking and Mimicking

Expansion is equivalent to **Contraction** in negated contexts.

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- Suppose $\neg(A \Rightarrow (A \Rightarrow B))$ entails $\neg(A \Rightarrow B)$. Then by contraposition, $A \Rightarrow B$ entails $A \Rightarrow (A \Rightarrow B)$.

Collapsing Masking and Mimicking

Expansion is equivalent to **Contraction** in negated contexts.

- Suppose $\neg(A \Rightarrow (A \Rightarrow B))$ entails $\neg(A \Rightarrow B)$. Then by contraposition, $A \Rightarrow B$ entails $A \Rightarrow (A \Rightarrow B)$.

If d is a dispositional property whose negation $\neg d$ is also a dispositional property, then masking arguments with respect to d can be systematically transformed into mimicking arguments with respect to $\neg d$, and vice versa.

Preliminary Moral

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But we can extract a sharper moral than this.

Dispositional Mutability

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- A strongly centered conditional supports the inferential condition for masking arguments; a weakly centered conditional supports the inferential condition for mimicking arguments.
- For both masking and mimicking, the possibility condition is supported by the intuition of **dispositional mutability**.

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- **For Masking**: We need that an object can have a dispositional property, but be such that were it placed in a disposition-manifesting situation, it would not have that dispositional property.
- **For Mimicking**: We need that an object can be such that if it were placed in a disposition-manifesting situation, it would have a dispositional property, but be such that it does not have the dispositional property.

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Mimicking requires the compossibility of $c \Rightarrow d$ and $\neg d$. This in turn requires that there be no inference from $c \Rightarrow d$ to d.

Dispositions and Conditionals

The possibility conditions for masking and mimicking thus require:

- $d \nvDash c \Rightarrow d$
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Dispositions and Conditionals

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General Moral

The conditional used in a conditional analysis should not be loaded down with inferential features that we reject for dispositions.

A Canonical Test

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1. Reject the apparent data regarding inferential features of dispositional vocabulary.
2. Adopt a conditional with a different logic, so that the inferential features are brought back into alignment.
3. Reject the conditional analysis.

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Proposal For a Test

Formulate a justification for the plausibility of a desired possibility condition. Now replace all occurrences of the relevant dispositional vocabulary with the proposed conditional of analysis. If the resulting text retains its plausibility, then we have evidence that we should adopt course (2) [find a new conditional logic] rather than course (3) [reject the conditional analysis].

Applying the Canonical Test

Lewis on Dispositional Ephemerality

Glassblowers learn to anneal a newly made joint so as to make it less fragile. Annoyances can make a man irascible; peace and quiet can soothe him again. (Lewis, “Finkish Dispositions”)

Applying the Canonical Test

Lewis* on Conditional Ephemerality

Glassblowers learn to anneal a newly made joint so as to make it less **prone to break if struck.** Annoyances can make a man **such that if he were bothered, he would become angry**; peace and quiet can make him again **such that if he were bothered, he would remain calm.**

One More Application

Lewis Against Conditional Analyses of Dispositions

Imagine that a surface now has just the molecular structure that disposes things to reflect light; but that exposing it to light would catalyze a swift chemical reaction and turn it into something unreflective. So long as it's kept in the dark, is it reflective? – I think so; but its reflectivity is what Ian Hunt once called a 'finkish' disposition, one that would vanish if put to the test. (So a simple counterfactual analysis of dispositions fails.) (Lewis, "Dispositional Theories of Value")

One More Application

Lewis* Against Conditional Analyses of Conditionals

Imagine that a surface now has just the molecular structure that **makes things such that they would reflect light if light were to fall on them**; but that exposing it to light would catalyze a swift chemical reaction and turn it into something **not such that it would reflect light if light were to fall on it**. So long as it's kept in the dark, is it **such that it would reflect light if light were to fall on it**? – I think so; but its **being such that it would reflect light if light were to fall on it** is what Ian Hunt once called a 'finkish' **counterfactual feature**, one that would vanish if put to the test. (So a simple counterfactual analysis of **counterfactuals** fails.)

One More Conditional Fallacy Argument

Another Version of Dispositional Mutability

Mediation Cases: The conditions of manifestation lead to the intervention of a intervener, which in turn leads to a blocking of the dispositional manifestation. (Sorcerers who protect fragile glasses, etc.)

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$c \Rightarrow i$, $i \Rightarrow \neg m$, d

A First Draft Mediated Masking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow i$	A
3. $i \Rightarrow \neg m$	A
4. $c \Rightarrow \neg m$	?, 2,3
5. $\neg(c \Rightarrow m)$	**Exclusion**, 4
6. $\neg d$	**Taut**, 1,5

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- **Trans**: $A \Rightarrow B,\ B \Rightarrow C \vDash A \Rightarrow C$

But this principle fails for the Stalnaker/Lewis conditional.

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The Stalnaker/Lewis conditional *does* support a weakened transitivity principle:

- **Weak Trans**: $A \Rightarrow B,\ B \Rightarrow C,\ B \Rightarrow A \vDash A \Rightarrow C$

We can use this weakened principle to construct another mediated masking argument.

A Second Draft Mediated Masking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow i$	A
3. $i \Rightarrow \neg m$	A
4. $i \Rightarrow c$	A
5. $c \Rightarrow \neg m$	**Weak Trans**, 2,3,4
6. $\neg(c \Rightarrow m)$	**Exclusion**, 5
7. $\neg d$	**Taut**, 1,6

Sketchy Remarks on Evaluating Mediated Masking

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1. Reject the possibility condition. We are owed an explanation of why we think that an object can possess a dispositional property, be such that if it were placed in its conditions of manifestation an intervening agent would act, have an intervening agent who is such that if he acts, the disposition would not manifest, and have an intervening agent who is such that if he were to act, it would be because the object was placed in the conditions of manifestation. *Maybe* this is too high a burden to be met.

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2. Reject the inferential condition. This requires exploring regions of logical space beyond the Stalnaker/Lewis conditional.

Another Masking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow \neg d$	A
3. d	A (for reductio)
4. $c \Rightarrow m$	**Taut**, 1,3
5. c	A (for $\Rightarrow$I)
6. m	$\Rightarrow$E, 4,5
7. $c \Rightarrow m$	$?_1$, 5,6
8. d	**Taut** 1,7
9. $c \Rightarrow d$	$\Rightarrow$I, 5,8
10. $\neg(c \Rightarrow d)$	$?_2$, 2
11. $\neg d$	Reductio, 3,9,10

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1. $?_1$ can be filled by **Strong Conditional Introduction**, which for the Stalnaker/Lewis conditional is equivalent to strong centering.
2. $?_2$ can be filled by **Exclusion**:
   - **Exclusion**: From $A \Rightarrow \neg B$, infer $\neg(A \Rightarrow B)$.

   For the Stalnaker/Lewis conditional, **Exclusion** is valid iff the conditional antecedent is possible.

Another Masking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow \neg d$	A
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4. $c \Rightarrow m$	**Taut**, 1,3
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9. $c \Rightarrow d$	$\Rightarrow$I, 5,8
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Back

Another Mimicking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow d$	A
3. c	A (for $\Rightarrow$I)
4. d	$\Rightarrow$E, 1,3
5. $c \Rightarrow m$	**Taut**, 1,4
6. m	Modus Ponens, 3,5
7. $c \Rightarrow m$	$\Rightarrow$I, 3,6
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Another Mimicking Argument

1. $\Box(d \equiv (c \Rightarrow m))$	A
2. $c \Rightarrow d$	A
3. c	A (for $\Rightarrow$I)
4. d	$\Rightarrow$E, 1,3
5. $c \Rightarrow m$	**Taut**, 1,4
6. m	Modus Ponens, 3,5
7. $c \Rightarrow m$	$\Rightarrow$I, 3,6
8. d	**Taut**, 1,7

Note that the validity of Modus Ponens is for the Stalnaker/Lewis conditional equivalent to weak centering.

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