### Most Logical HOW TO CONVINCE OTHERS OF YOUR IDEAS THROUGH BETTER ARGUMENTS

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### A bit about me



Trained in applied maths and engineering



- Building convincing arguments is part of my day-to-day
  - Developing insights
  - Sharing context
  - Informing decisions



# Why do I give a shout convincing other people of stuff?







SHARE

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 $\Box$ 

Dylan Blanchard I like pizza≪ and I try to understand humans. UX Researcher @Shopify. Mar 27 · 5 min read

### The Two Sides of Research





This requires convincing, and convincing requires building valid arguments.

This isn't just relevant to researchers.





There are plenty of scenarios where you need to convince others of what you have to say.



### Think of:

- Proposals
- Findings reports
- Formal reviews
- Giving feedback
- Github issues
- Conference talks
- Articles



### 8:29 PM May 17 • Re-open



### Dalia El-Shimy

Selected text:

The goal of a 💷

There's a piece missing to our conclusion here. Here's how the argument reads right now: 1. Merchants churn because of a variety of reasons, including not being ready 2. Admin is too complex for people and includes things they don't nee 3. People starting out having very Shopify as an ecommerce solutior support them with We need to reduce the complex parts of Shopify are exposed Therefore =>

(note: I would consider flipping 2 a that way and see how it feels)

It's a bit difficult to see where our o from. What we need instead is to b as our solution to ( you addressed earlier: 1. It allows concept of progressive disclosure

delshimy commented on Sep 12		
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. Shapity the best P. menchants still hum P. Vc thy 're not nedy P. and Admin is too complex (Permission Why. What they need instead Why. What they need instead 13 X, Y, Z Who dis. · a website hulden helps so is a good starting point to achieve that we need PD Bonus: PD can be leveraged decuber after to support The entire experience





If you're gonna put forth an idea, you'll want to make it convincing.



# And to convince people, you'll need to form valid arguments.





# And to do that effectively, we can turn to Logic.





### What is Logic?\*

The analysis, appraisal, and classification of arguments. It shows up in:

- Philosophy
- Mathematics
- Law
- Computer science
- Etc.

### \* Not the rapper.





But wait, what's an "argument"?





COVID-19 is thought to spread mainly through close contact from person to person, including between people who are physically near each other (within about 6 feet). People who are infected but do not show symptoms can also spread the virus to others. Vaccines can boost one's immune response to the virus and reduce the severity of symptoms, but more research is still needed to determine how they affect the spread of the virus. Therefore, until more is known, it is safest to continue adhering to social distancing and masks guidelines to reduce the spread of the virus.

### An argument

Berlin is a really great place to be in the summer. The weather gets warm, and people spend more time outdoors: hanging out in parks, going to lakes, cycling around the city, and enjoying meals on terraces. The city's atmosphere tends to be relaxed and joyful.

### Not an argument

To give an argument is to make a claim and to offer other claims as reasons for its acceptance.







Some helpful definitions

- **Conclusion:** a claim meant to be 4 supported by reasons offered in the argument.
- Premise: a claim put forth as a reason for a conclusion



## Conclusions + premises

## argument





## Going back to our example

- near each other (within about 6 feet).
- determine how they affect the spread of the virus.
- virus.

**Premise 1:** COVID-19 is thought to spread mainly through close contact from person to person, including between people who are physically

**Premise 2:** Vaccines can boost one's immune response to the virus and reduce the severity of symptoms, but more research is still needed to

**Conclusion:** Until more is known, it is safest to continue adhering to social distancing and masks guidelines to reduce the spread of the

### that, which shows that



- **Premise indicators:** since, because, for, seeing as, the reason is that
- **Conclusion indicators:** so, thus, therefore, consequently, it follows









### Inference

**Premise 1:** COVID-19 is thought to spread mainly through close contact

**Premise 2:** Vaccines can boost one's immune response, but more research ist still needed to determine how they affect the spread of the virus.

> Inference is the move from premise(s) to conclusion

**Conclusion:** It is safest to continue adhering to social distancing and masks







COVID-19 is thought to spread mainly through close contact from person to person.

Vaccines can boost one's immune response, but more research ist still needed to determine how they affect the spread of the virus.

It is safest to continue adhering to social distancing and masks guidelines to reduce the spread of the virus.

### Standard form



If we draw multiple conclusions from a single premise (or set of premises), we are dealing with several different arguments. We are not dealing with one argument with several conclusions.

- Arrange the argument so the premises come before the conclusion they support.
- Number the premises and conclusions.
- After each conclusion, write the number of the premise(s) that support it.

### Structuring your argument



- 1. Ice cream is really refreshing.
- 2. When it gets warm, people like to go out for ice cream.
- 3. Ice cream is also very delicious.
- 4. Eating ice cream makes people happy. 3
- getting warmer. 2, 4

### Example

5. People are generally in a pretty good mood when the weather starts

# Now that we know what arguments are...





# ...how can we use them to better convince others of our ideas?





### SIMPLE.



If we put forth premises we know to be true, and use them to create valid arguments, we basically win at life.

**s** shopify

# "True" and "valid" are not the same thing.





**s** shopify

## The concept of "validity"

- A valid argument is one in which there is no possible way for the premises to be true, and the conclusions to be false at the same time.
- If all of the premises are true, the conclusion would have to be true.
- An invalid argument is one where the premises might be true, but the conclusion might not.





Valid: "If Dalia walks past the ice cream shop, she definitely gets an ice cream. Dalia walked past the ice cream shop today. Therefore, she had an ice cream."



conclusion.

### Examples

- The truth of the premises guarantees the truth of the conclusion.

The truth of the of the premises does not guarantee the truth of the

## So what makes something true?







Data, research, evidence.





And what makes something valid?



## You follow pre-defined structures.







Have you noticed? All of done so far is build arguments to convince you of how useful arguments are.

**s** shopify





### Modus Ponens

If Dalia eats ice cream, then Dalia is happy.

Dalia ate ice cream.

Dalia is happy.





### **Modus Tollens**

If Dalia eats ice cream, then Dalia is happy.

Dalia is not happy.

Dalia did not eat ice cream.

## Hypothetical Syllogism

If Dalia g

If P, then Q

If Q, then R

If P, then R

- If Dalia goes out, she'll get a an ice cream.
- If Dalia gets an ice cream, she'll be happy.
- If Dalia goes out, she'll be happy.





- Either Dalia gets an ice cream, or she gets a donut.
- Dalia did not get a donut.
- Dalia got an ice cream.

### **Constructive Dilemma**

Either P or Q

If P, then R

If Q, then S

R or S

- Either we order Thai food or we order Italian food for dinner tonight.
- If we order Thai food, we'll get red curry.
- If we order Italian food, we'll get pasta.
- Either we're getting red curry, or we're getting pasta for dinner tonight.



Some invalid argument forms







### Denying the antecedent

- If Dalia eats ice cream, then Dalia is happy.
- Dalia did not eat ice cream.
- Dalia is not happy.





### Affirming the consequent

If Dalia eats ice cream, then Dalia is happy.

Dalia is happy.

Dalia ate ice cream.

## What about fallacies?









### argument

# evidence doesn't necessarily make it so

### Fallacies

- Formal fallacy: when there's a flaw or error in the structure of your

Informal fallacy: claiming something to be true when the supporting



### Informal fallacies

- Appeal to ignorance: Arguing that your conclusion must be true because there is no evidence against it.
- Appeal to inappropriate authority: When the authority cited is not an authority in the proper area.
- Appeal to general belief: Asserting a claim is correct just because people generally believe it is.

### More informal fallacies

- **Appeal to popular attitudes and emotions:** Appealing to popular attitudes, racial fears, prejudices, patriotic impulses rather than relevant reasons and evidence



**Gambler's fallacy:** The idea that some things are "due" (e.g. heads after a series of tails, an overdue earthquake)



Let's try some of this out.





- Form groups of 3.
- follow).
- conclusion.
- Present to the rest of the group.

### Build a valid argument to support or refute a conclusion (examples to

Structure your premises in such a way that they support your final

## Arguments to try out in your group

- Döners are (not) better than shawarmas.
- Vaccination passports should (not) be required for international travel.
- Basic universal income is (not) a beneficial scheme.
- Bowie is better (not) than Prince.
- Try your own!





Questions?



## A fun one to close with...

