❖ *Evaluating Arguments* ❖

1.7. Convincing Arguments: Two Factors

> "Whether he was right to take that attitude is not the question we have to consider at the present moment. The point, for us, is that he was at least being logical: if you grant someone's premise, you have no right to reject what follows next."
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> Cicero, **Tusculan Disputation V**; in **On the Good Life**, ed. and trans. Michael Grant (Penguin Books, 1971), pp. 65-66.

We turn at last to evaluation of arguments, asking what makes an argument good or bad. As we take an argument to be for something – *convincing* someone of its conclusion – we take the goodness of an argument to turn on how well it serves this purpose. Argument evaluation is then a matter of whether an argument is **convincing** or not. To work out principles of evaluation, we must therefore determine the ingredients necessary for being a convincing argument. We will settle here on two factors – one quite obvious, the other slightly subtler.

1. The First Factor: Truth. As the following argument illustrates, one essential ingredient for being a convincing argument is apparent.

Argument A

1. Benjamin Franklin was born in Boston.
2. Benjamin Franklin was the first U.S. president.

∴ The first U.S. president was born in Boston.

There is something undeniably pretty about this argument: its parts fit together so nicely, like clockwork, that it seems very **logical**. But our question here is whether the argument is **convincing**. Does the argument convince *you* that the first U.S. president was born in Boston?

If you know even a little U.S. history, you will remain unconvinced by this argument, since –despite that second premise's claim to the contrary –

Benjamin Franklin was *not* in fact the first U.S. President. The second premise is **false**.

In general, an argument with one or more false premises will not make a convincing case for its conclusion. No surprise there: since the premises are what do the convincing, the whole attempt to convince blows up on the launchpad if the audience doesn't accept those premises as true.
This is the first requirement for a convincing argument.

1. The premise(s) must be true.

Now, if true premises were the *only* requirement for a convincing argument, logical life would be simple indeed: for then to decide whether an argument is convincing we would need only determine whether the premises were all true. But life is not so simple – as Argument B illustrates.

Argument B

1+1=2
2+2=4

∴ The first U.S. president was born in Boston.

Rational people generally agree that Argument B is among the unconvincing arguments about presidential birthplaces. Indeed, the argument seems quite absurd. For all its failings, however, we must at least credit Argument B with this virtue: *all its premises are true*.

Since all the premises of Argument B are true, while the argument remains strikingly unconvincing, we see that true premises are *not* the only requirement for a convincing argument.

2. The Second Factor: Validity. A noteworthy fact about Argument B is that the premises and conclusion discuss completely different topics. So one reasonable guess about the missing second requirement might be that *the premise and conclusion must discuss the same subject matter*.

That's generally true. But ultimately we will take such a radical swerve in subject matter as only a *symptom* of a deeper problem.

Argument C shows why.

Argument C

1. Benjamin Franklin was born in Boston.
2. Benjamin Franklin was ***not*** the first U.S. president.

(so) The first U.S. president was born in Boston.

All the premises of Argument C are true, and those premises discuss the same topic as the conclusion. Yet Argument C doesn't convince us of its conclusion. So meeting the '*no change of subject matter*' requirement, even together with the true premises requirement, still does not ensure a convincing argument.

Intuitively, the failings of Arguments B and C are the same: while both have true premises, in each case the premises don't provide anything like adequate reasons for believing the conclusion. An argument which **convinces** us of a conclusion will be an argument providing **reasons** to believe that conclusion is true – ideally, reasons sufficient to **ensure** a true conclusion. It's the nature of such *sufficient* evidence that its truth brings truth of the conclusion in its wake. That is: **when premises *do* provide sufficient reasons for believing the conclusion, we believe the conclusion once we believe the premises**.

That's clearly a standard Arguments B and C fail to meet, since with them we believe the premises but still *don't* believe the conclusion. However true the premises of these arguments, those premises don't provide evidence *sufficient to guarantee truth of the conclusion*.

That shortcoming highlights the missing second requirement for a convincing argument. Not only must the premises be true (the first requirement), they must exhibit the further feature that **their truth** would be **sufficient to guarantee truth of the conclusion**. If an argument has this second feature we will find that **whenever** its premises are true, its conclusion must be true as well. And we mean "whenever" in the strongest terms: true premises *guarantee* true conclusion, *without exception*.

An argument where premises and conclusion are linked in this way is a **valid argument**.

> **Valid argument**: an argument where true premises are always (without exception) followed by a true conclusion.
>
> (*In other words*: an argument where true premises are sufficient to guarantee a true conclusion.)
>
> (*In still other words*: an argument where it's impossible to have true premises without having a true conclusion.)

Likewise "**validity"** means *being valid* – just as "solidity" is *being solid*, "liquidity" is *being liquid*, and so on.

Validity turns out to be precisely what Arguments B and C are lacking.

> **Argument B**
>
> 1+1=2
> 2+2=4
> ---
> (so,) The first U.S. president was born in Boston.

If Argument B were valid, its conclusion would be true whenever its premises were – *without exception*. But in fact Argument B allows plenty of exceptions.

In the actual world, all the premises of Argument B are true. But it's false that the first U.S. president was actually born in Boston. (The first U.S. president was George Washington, who was born in Westmoreland County, Virginia.) The world before our eyes provides a case where the conclusion of Argument B is **not** true, even though the premises are. That shows that true premises in Argument B do **not** guarantee a true conclusion. Argument B is not valid – it's **invalid**.

Argument C is likewise invalid.

Argument C

1. Benjamin Franklin was born in Boston.
2. Benjamin Franklin was ***not*** the first U.S. president.

(so) The first U.S. president was born in Boston.

Here again the premises are true but the conclusion false, so true premises don't guarantee a true conclusion in C, as they would in a valid argument.

Evidence that an argument is invalid won't always be sitting conveniently before our eyes. Sometimes to see that an argument is invalid we need to consider other possible situations – situations other than the way things *actually* are. Argument D is a case in point.

Argument D

1+1=2
2+2=4

∴ The first U.S. president was born in Westmoreland County, Virginia.

Here the premises and conclusion are both actually true. But that doesn't make Argument D valid. For an argument to be valid, true premises must **always** be accompanied by a true conclusion – not just in one lucky case. So we ask: is it even *possible* for the premises of D to be true, without the conclusion being true?

Sure: if John Adams had won that first election, it would have been *false* that the first U.S. president was born in Westmoreland County, Virginia (since Adams was born in Braintree, Massachusetts). But however the election turned out, 1+1 would still equal 2, and 2+2 would equal 4. So the possible situation where Adams won would be a situation where the premises of D were true, but the conclusion false. Since it's possible for Argument D to have true premises without a true conclusion, Argument D is **invalid**.

Validity turns out to be a fairly high hurdle for an argument to clear, since it requires a true conclusion to accompany true premises with no **possible** exceptions. As Argument D shows, it's not enough that true premises are *actually* followed by true conclusion – if it's even *possible* for an argument to have true premises without true conclusion, then that argument is invalid. We can think of a valid argument as one where premises provide an ideal level of support for the conclusion – where the premises provide a knock-down **proof** of the conclusion.

To see that validity does not set an *impossibly* high hurdle, we turn again to Argument A.

Argument A

1. Benjamin Franklin was born in Boston.
2. Benjamin Franklin was the first U.S. president.

(so) The first U.S. president was born in Boston.

The True Premises requirement tripped up this argument. But it fares better in terms of validity: intuitively, in any situation where both of the premises *were* true, the first U.S. president would **have to** have been born in Boston. Put the other way around: it seems **impossible** for both the premises to be true, yet for the conclusion to somehow still be false. And that's just what it takes to be a valid argument. Argument A is **valid**. (Validity, it turns out, is the lovely 'clockwork' feature we noticed earlier in A.)

The way **validity** and **true premises** fit together provides an even lovelier piece of clockwork. For an argument meeting both requirements – a *valid* argument with *true premises* – provides the following.

(i) *if* the premises are true, *then* the conclusion is also true

and

(ii) the premise *are* true.

Together these two conditions guaranteed that the conclusion is true. And that's just what we look for in a convincing argument: an argument providing evidence sufficient to *prove* that the conclusion is true.

So we take validity to be the missing second requirement for a convincing argument.

Factors in a Convincing Argument:

1. The premise(s) must be *true*.
2. The argument must be *valid*.

Note that these two factors are independent. As Argument A showed, **a valid argument can have false premises**.

Argument A

1. Benjamin Franklin was born in Boston.
2. Benjamin Franklin was the first U.S. president.

(so) The first U.S. president was born in Boston.

Being valid is merely a matter of "if": *if* the premises of a valid argument were true, its conclusion would also be true.

As Arguments B, C, and D showed, **an invalid argument can have (all) true premises**. Since neither of the two factors brings the other, our list of factors for a convincing argument can't do without either.

Finally: for all its seeming technicality, the concept of validity largely parallels the familiar notion of **following from**.

For instance, Argument A is a valid argument. But notice that its conclusion *follows from* its premises: we would say that if it *were* true that Benjamin Franklin had been the first U.S. president and had been born in Boston, then it would indeed *follow* that the first president was born in Boston.

By contrast, Arguments B, C, and D were all deemed invalid. And we agree that in each argument the conclusion *does not follow* from the premises.

(**B**)

1. 1 + 1 = 2.
2. 2 + 2 = 4.

∴ ∴ The first U.S. president was born in Boston

(**C**)

1. Benjamin Franklin was born in Boston.
2. Benjamin Franklin was not the first U.S. president.

∴ The first U.S. president was born in Boston

(**D**)

1. 1 + 1 = 2.
2. 2 + 2 = 4.

∴ The first U.S. president was born in Westmoreland County, Virginia.

While we will later note occasions where this connection is strained, we will see many more cases illustrating the close parallel between **validity** and '**following from**'.

(As a bit of stylistic variety, we will sometime discuss facts about 'following from' in terms of **entailment**: if the conclusion follows from the premises, then the premises **entail** the conclusion. So a valid argument is one whose premises entail its conclusion.[1])

Taking validity as a more technical counterpart to old-fashioned 'following from,' we could restate our two requirements as follows.

> For an argument to be convincing, (i) its premises must be true, and (ii) its conclusion must follow from those premises.

That combination of requirements seems quite reasonable: the truest premises in the world are of no help in an argument if the conclusion doesn't follow from them; and neither are we convinced of a conclusion by seeing that it follows from a pack of lies. The reasonableness of these two requirements is further evidence that our list is getting it right.

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[1] The relation between following from and entailing is like the relation between buying and selling. The sentences "Neko bought a fish from Jack" and "Jack sold a fish to Neko" describe the same transaction, but from different points of view: in terms of what Neko did (buying) and of what Jack did (selling). Likewise, in a valid argument **following from** is what the **conclusion** does (to the premises), while **entailing** is what the **premises** do (to the conclusion).

3. Conclusion: Logic as the Science of Validity. Having stressed the independence of our these two requirements, and the importance of each, it may come as a surprise to find that logic devotes almost no effort to testing premises for truth, focusing almost exclusively on tests of validity.

That's a simple matter of which investment of time and labor is likely to yield results. To build a full-proof test for true premises – say, a computer that could consider any premise whatsoever and decide if it's true or false – we would need to know *everything*. Since it's not likely we'll ever be in a position to construct such an omniscient computer, a full-proof test for true premises looks like a pipe dream.
By contrast, logicians have had considerable success building general tests of validity. And for this reason alone, we will find it fruitful in logic to focus on validity.

Recognizing that, we can sharpen our original understanding of logic as 'the study of arguments'. More precisely: **logic is the study of validity** – the science of "**what follows from what**."

Summary: Truth, Validity, and Convincing Arguments

- Two requirement for a rationally **convincing** argument:

  1. The **premises** of the argument must **all** be **true**.

  2. The **argument** must be **valid**.
  (Informally: the conclusion must ***follow from*** the premises.)

- **Valid argument**: an argument where true premises are always (without exception) accompanied by a true conclusion.

  (*In other words*: an argument where it's **impossible** for the premises to be true without the conclusion also being true.)