"There is a sharp line between describing something and offering an explanation of it." To what extent do you agree with this claim?

Candidate Number: hwb523

Word count: 1593

Most people would probably feel comfortable defining – in their words – what is the difference between description and explanation. D*escribing* the elements of a song is very different from *explaining* why that song makes them feel sad, for example. In short, description answers the "what," while explanation answers the "how" or "why." Describing, for this work, will be defined as the act of representing some entity or phenomenon through language. Explaining, on the other hand, must incorporate a level of analysis, elaborate enough to give reasons. In this essay, we shall explore the given prompt, by comparing explanation and description across Areas of Knowledge such as Natural Sciences and History. In particular, we shall analyze the role that causality and replicability play in defining a sharp line between describing something and offering an explanation for it.

Two Knowledge Questions that will guide our discussion are:

1. What elements constitute a description and an explanation across the different Areas of Knowledge?
2. Are some Ways of Knowing unique and exclusive to the description or explanation process?

First, the Natural Sciences are the perfect example where description and explanation seem to be, *at first*, very distinct from each other. In Philosophy of Science, this distinction is similar to the difference between a theory and a law. On the one hand, a law is a statement – often phrased in mathematical terms – that derives from empirical observation and is expected to hold every time, given the same conditions. Just like descriptions, laws answer "what

happens." On the other hand, a theory is a whole framework encompassing models, ideas, and laws; theories answer "how does something happen," just like explanations.

Take the example of an apple falling to the ground. From a physics standpoint, the *description* of the event is complete if we know the position and momentum of the apple at any moment in time. Instead, if we are to provide an *explanation*, gravity is typically invoked: "The Earth exerts a pulling force on the apple, which causes it to accelerate towards it." Here, note that to answer the "why" question, we had to establish a *causal* relationship: an abstract entity called “the force of gravity” acts on the apple (Dynamics) and, as a consequence, the apple moves (Kinematics). To summarize, we – humans – almost always construct our scientific models for the universe as cause-consequence. That is how *our* Reason, the primary Way of Knowing involved, works.

Nevertheless, this former perception of science is limited. In one of my favorite novels, *The Story of Your Life*, author Ted Chiang tells the story of a physicist and a linguist who try to communicate with heptapods, extraterrestrial beings that reached Planet Earth. Unfortunately, heptapods see the world in a non-linear, non-causal fashion. At some point, the physicist realizes that, even though both humans' and heptapods' *descriptions* of natural phenomena are the same, the heptapods' way of thinking involves an entirely different *explanation*. Their way of thinking reminds of the Lagrangian formulation of Mechanics, whereby a quantity known as the Action,

$$S = \int L(q_1, q_2, ..., \dot{q}_1, \dot{q}_2, ..., t)dt$$

is minimized. Physicists call this “Hamilton's Principle of Least Action.” Yet, although resting on a vastly different foundation, the Lagrangian formulation is equivalent to Newton's

in its descriptions: it will still yield the positions and momenta at each point in time. This is an instance of two – very different – explanations, given the same description.

However, since this interpretation is not causal, we are reduced to explain as follows: "The apple falls, such that the complicated integral above-defined takes on a minimal value." This "explanation" does not say much – it is merely a fancy mathematical restatement of the initial *description*! We arrive at the exciting conclusion of an initially pronounced division between explanation and description, that becomes blurry when taking the variational (i.e., Lagrangian) approach.

To expand on the previous point, consider the following Knowledge Claim: "I know the apple falls because of gravity." If we validate this explanation, it is necessary to axiomatically postulate the existence of gravity and *believe* in its existence as a sole theory. If not, the boundary between explaining and describing becomes once again temporary. After all, we can ask why gravity behaves the way it does. Succinctly, the Way of Knowing characteristic to the purest of explanations is *faith*.

On the other hand, if we reject the existence of an absolute explanation, then, for any scientific theory, it is possible to keep asking questions until reaching philosophical inquiries. In what I consider the best part of an interview, American physicist Richard Feynman was asked why magnets repel each other. In response, he proposed the following thought experiment:

> Aunt Minnie is in the hospital. Why? Because she went out, slipped on the ice, and broke her hip. That satisfies people. [...], but it wouldn't satisfy someone who came from another planet and knew nothing about why when you break your hip, do you go to the hospital. How do you get to the hospital when the

> hip is broken? Well, *because* [...] **When you explain a why, you have to be in some framework that you allow something to be true. Otherwise, you're perpetually asking why.**
>
> (Feynman, 1983)

Feynman gets to the most crucial point: one must – sooner or later – allow for something to be true. Let us examine the statement: "Magnets repel each other because they do." This apparent fallacy is an explanation that turns out to be a description in the end. Simply said, descriptions are the bedrock behind all explanations. Otherwise, we are perpetually asking why. Interestingly enough, Feynman used examples of everyday life, not just atoms or magnets: the barrier between explanation and description being diffuse extends to all knowledge we claim as factual.

On the basis thereof, we must deal with difficulties in extending this line of thought to other Areas of Knowledge. Take History, for example, which relies mostly on the recorded past of human experience. A *description* of a historical event is composed of accounts, dates, statistical data, primary and secondary sources, among others. Nevertheless, the difference between two *explanations* of the same historical event arises from different responses by historians to the following Knowledge Question: "Which elements should be weighted more when explaining History?"

To illustrate, let us examine the discovery of the Americas. While small discrepancies on what happened – descriptions – may exist, a big contrast in explanations arises between those of Eduardo Galeano's (a socialist) and Niall Ferguson's (a right-wing-leaning historian). Here, even when accepting the same description (historical reconstruction of facts) as true, they will give very different explanations for the causes or motivations, owing to different

answers to the above-mentioned Knowledge Question: while Ferguson may cite the "instruction of the Native Americans by the Europeans" as an explanation to the abhorrent acts made in the name of imperialism, Galeano pinpoints at an ingrained sentiment of superiority in the Western World, as a cause of the genocide that took place by the Europeans.

While we had established that if we wanted to have an absolute explanation in the Natural Sciences, it was necessary to postulate the existence of whatever thing our explanation relied on. This is impossible to achieve in disciplines like History. Here, opposing views can perfectly coexist due to the subjective nature of the Subject. Thus, we must abandon this criterion for pure explanation.

However, the former does not necessarily imply that giving an explanation for World War II is the same as describing it. Instead, we should keep seeking where the stark difference lies. For this, we can turn once again to the concepts of causality and replicability, which distinguish History from the Natural Sciences: while scientific theories from the latter are only valid if other scientists replicate results, the former does not have that. Albeit two historical events are strikingly similar, *they will never be precisely the same*. That is the origin of the distinction between an explanation for a historical event and its description.

To expand on the claim just made, it is worth examining the opposite perspective: what if History *does* have the properties of replicability and causality? For that to happen, there must be some type of hidden law or pattern that History inevitably follows. Indeed, there is a school of thought that believes in the Cyclic Nature of History. This philosophy suggests that "History repeats itself, and two events – no matter how different – may actually be the same." It is only when we assume this posture, that Feynman's *circular* argument can

be applied: "Why did the French Revolution happen? – Because it had to!" Explanation equals description, once again.

¿To what extent can we draw a line between describing something and offering an explanation of it? Having examined a plethora of contrasting views on both the nature of History and the Natural Sciences, the answer depends on our point of view about the nature of the Area of Knowledge itself. *Id est,* the more one believes in the existence of a *cause* for an event (and the *replicability* of such event), the *lesser the extent* to which one can identify a clear barrier between the two concepts. Personally, I feel more inclined towards this perspective. To me, the line is quite sharp in AoKs like History, the Arts, or Ethics, because I perceive these Areas as more spontaneous and difficult to replicate. On the other hand, description and explanation in the Natural Sciences are – in my point of view – ultimately the same. After all – just like Feynman – we can always keep asking why.

References

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Christopher Sykes [Christopher Sykes] (2018, 4th September). Feynman: Magnets FUN TO IMAGINE 4/ NEW updated higher quality version! [video file]. Retrieved from https://www.youtube.com/watch?v=Q1lL-hXO27Q

TOK essay assessment instrument

Ricardo Skewes

Does the student present an appropriate and cogent analysis of knowledge questions in discussing the title?						
Aspect	Level 5 Excellent 9–10	Level 4 Very good 7–8	Level 3 Satisfactory 5–6	Level 2 Basic 3–4	Level 1 Elementary 1–2	Irrelevant 0
Understanding knowledge questions	There is a *sustained focus* on **knowledge questions** connected to the prescribed title and are well chosen—**developed** with *investigation* of **different perspectives** and **linked** *effectively* to **areas of knowledge** and/or **ways of knowing**.	There is a *focus* on **knowledge questions** *connected* to the prescribed title—**developed** with *acknowledgment* of **different perspectives** and **linked** to **areas of knowledge** and/or **ways of knowing**.	There is a *focus* on *some* **knowledge questions** *connected* to the prescribed title—with *some* **development** and **linking** to **areas of knowledge** and/or **ways of knowing**.	*Some* **knowledge questions** that are *connected* to the prescribed title are considered, but the essay is largely *descriptive*, with *superficial or limited* **links** to **areas of knowledge** and/or **ways of knowing**.	The essay has only very limited relevance to the prescribed title—relevant points are *descriptive*.	The essay does not reach a standard described by levels 1–5 or is not a response to one of the prescribed titles on the list for the current session.
Quality of analysis of knowledge questions	**Arguments** are *clear*, supported by **real-life examples** and are *effectively evaluated*; **counterclaims** are extensively *explored*; **implications** are *drawn*.	Arguments are *clear*, supported by **real-life examples** and are *evaluated*; some **counterclaims** are identified and *explored*.	*Some* **arguments** are *clear* and supported by **examples**; some **counterclaims** are *identified*.	Arguments are offered but are *unclear* and/or *not supported* by *effective* **examples**.	**Assertions** are offered but are *not supported*.	
Some possible characteristics						
	Cogent Accomplished Discerning Individual Lucid Insightful Compelling	Pertinent Relevant Thoughtful Analytical Organized Credible Coherent	Typical Acceptable Mainstream Adequate Competent	Underdeveloped Basic Superficial Derivative Rudimentary Limited	Ineffective Descriptive Incoherent Formless	

IB-TEC Conversion 10=100 // 9=100 // 8=95 // 7=90 // 6=85 // 5=80 // 4=75 // 3=65 // 2=50 // 1= 30 // 0=0

Teacher Comments:

Well done! Just try to make it clearer towards the end.

-Skewes