“Given that every theory has its limitations, we need to retain a multiplicity of theories to understand the world.” Discuss this claim with reference to two areas of knowledge.

What is a theory good for? Peter answered this question on his editorial that he named with the question itself: theories inform the nature (process, relationship between variables) of an area of content. (2012) While theories are essential in the spread of knowledge, they lack generality and tend to be very focused on specific scenarios. This raises the question, is one single theory sufficient for describing all the knowledge that one needs. I will be looking into this question from several different areas of knowledge: natural sciences, art and mathematics.

In the natural sciences, theory represents how facts are interpreted, (Tanner, 2017) and this is often done through observation of trends combined with performing scientific tests to determine the reliability of the claim. Since natural science greatly rely on reasoning as a way of knowing, existing theories can be refurbished by new theories to describe phenomenon that old theory does not account for. Newton’s gravitational equation exemplifies this: it sufficiently describe the effects of gravity on Earth, but fails to justify the elliptical orbit of Mercury around the Sun. (Siegel, 2016) Since Newton’s equations were broken in the cases of Mercury’s orbital, Einstein proposed a new equation relating the motion of mass and energy to the curvature of space-time. (Conover, 2018) This new theory is now used for determining the pathways of satellites, such as the Hubble space telescope, which are launched into space to increase human’s understanding of the universe. The constant updating nature of scientific theories increases their reliability. It thus ensures that the theory represents shared knowledge and personal knowledge as accurate as possible, which makes its description sufficient for matching one's needs.

Conversely, there are also scenarios in which one theory is insufficient in describing the natural world. This is often the case for change in enthalpy questions in chemistry. To calculate the change in enthalpy, students need to recognize the theory of conservation of Energy (NASA, 2013) as well as applying Hess’s law during the calculations. (LibreTexts, 2019) Hess’s Law states that the change in enthalpy is independent of the pathway between the initial and final states. Therefore, when combined with the conservation of energy, past knowledge of known enthalpy changes can be used to calculate the new enthalpy. This is not to mention the required understanding of atomic theory (describes the nature of matter) for these calculations to make sense. These theories all work hand-in-hand to solve problems, many of those apply to real life. Vital items to our daily life such as refrigerator, are only possible with these theories in mind during the design process. Consequentially, the presence of a multitude of theories is required in certain cases to model and explain certain phenomenons.

Interpretations of art often exist in many different perspectives. For anti-intentionalism, each person interprets art differently from everyone else, and have their theory of what the art means. (Szu-Yen, 2016) The Last Supper is a famous painting by Leonardo da Vinci, (zelazko, 2018) and other artists have drawn out their interpretation of this image. Ben Willikens’ portrait is of an empty table, filled with emptiness, Salvador Dali’s “The Sacrament of the Last Supper” creates a serious and dictatorial mood. (Fast Pass Tours, 2018) These different theories while are all describing the same art, dramatically differ in meaning. Having different interpretations of art is important as Art utilizes intuition often, especially in the analysis of artwork. Just like the saying “There are a thousand Hamlets in a thousand people’s eyes, the same artwork seems differs in the perspective in different people. (Han, 2014) With art being a form of expression, having a variety of perspectives deepens one’s interpretation and understanding of the message carried in a specific artwork. With each person’s interpretation being a different theory, it is important to understand a variety of those theories to understand a piece of artwork completely.

Contrariwise from the interpretation of art, theories are also important in creating art. Artist has been long bothered by methods to create illusions of depth on a flat surface. Modern art, however, uses the theory of linear perspective to guide people in creating illusions of depth. (Blumberg, 2016) Before the 14th century, which is when the theory was proposed, great art pieces such as “The Calling of the Apostles” appeared flat. Linear perspective thus has played an important role as the most accurate way to portray the sense of depth to help advance art as a whole. (Op art, 2018) While there exist other techniques to portray depth in paintings, they are significantly less effective than linear perspective. Paintings lacking linear perspective will look very 2D while paintings utilizing only linear perspective still has a great sense of depth. (Blumberg, 2016) This therefore shows how one single theory is sufficient in informing knowledge for artists to portray depth in their paintings.

Mathematics theory are often very context dependent and plays a critical role when solving math problems. This is the case for probability: two events happening can be classified as independent events, where the probability for event A happening is independent from the probability of event B happening. The two events can also be dependent, where the chance of event B happening depends on whether event A have happened. There is a theory that states that the probability of A and B happening of the same time is equal to the probability of A happening multiplied by the probability of B happening. However, this theory is restricted to cases where A and B are independent events. (Math Goodies, 2017) This theory is helpful for businesses such as casinos in designing their game, as the they would need to make sure that they have a higher probability of winning a game than the players in order to make profit. Being restricted to only independent events, this theory cannot therefore be used in other situations. This example thus shows that using multiple theories can cause errors in mathematics, as math theories are very situation dependent.

Being limited to the specific situations, math theories also have a specific focus towards a certain direction. In many complex problems such as proofs, where a general understanding of mathematics is required, having one certain theories may not be sufficient. This is the case for the proof for Euler’s identity. (eiπ – 1 = 0) Even the simplest proof of this identity requires trigonometry, complex numbers and Euler’s formula, as this identity is a very special case of Euler’s formula. This identity is very helpful in the field of electricity, as it greatly simplifies the calculations for electrical currents for the engineers designing electrical components. The cause of such a complex proof is that mathematics has a strong reliant on reasoning as the way of knowing. This combined with the abstract nature of math causes a lot of thinking being required before being able to justify new theories. To this day, there are still many theories, such as the Riemann hypothesis, that have yet to be proven but have real life application eager to apply them. The complex nature of math thus shows the importance of knowing a spectrum of theories, as individual theories will not be able to fully support further development in new mathematics theories.

The reliability of independent theories as suggested by natural science while strengthens the ability of a theory standing on its own, also improves the situation when multiple theories are utilized. The same can be said for the theories in art, as while using a single theory may be sufficient, using multiple theories can always increase the effectiveness of what the theory is trying to achieve. While using multiple theories may conflict with each other, as suggested my mathematics, this can be fixed by choosing the theories with caution, such that there is no conflict between the different theories. On the other side of the importance of maintaining a variety of theories, art and mathematics all suggest that it allows a more general understanding of the situation, which is important for increasing understanding of the situation and its future development. The area of natural science also suggests that maintaining a variety of theories will also help overcome the limitations of only having a single theory. Hereby, we see that, while in some situations using single theories are sufficient, there are also situations that problems can only be solved with the use of a multiplicity of different theories. Therefore, it is important to maintain a variety of theories to understand the world.

The implications of this conclusion is that it shows that the procession of more knowledge is helpful for gaining a better understanding of the world and thus promotes the learning of new knowledge. This being said, it is still important to acknowledge that there are situations that does not need a large amount of theories to understand, and overstating the need of multiple theories in these cases will only add complexity to the understanding of the situation.