Mathematics: A Fabrication or Part of the Fabric?

Imagine that you are wandering in the woods and you stumble upon a time machine in the middle of a desolate dusty plain. The place is uninhabited but there is a prickling sense that fills you; a knowledge of a people that lived there at some earlier time and it draws you to use the remaining seven minutes that are set on the timer dial on the dash of the old but pristine machine. You flip a switch. From inside the vessel the seasons and elevation change; hills form and vanish, vegetation becomes forest. Before thirty-one seconds the scene becomes a blur as the time acceleration, or reversal if you prefer, really kicks into gear. Images go by faster than the mind can pick up on, yet on some level it is being registered and fills you with a sense of history—of knowing. It eventually stops and there is a deciduous forest with low, thick-hanging vines. After a few quick minutes, through the windows of this machine a form appears. It is that of a man. He has well cut hair and a long, braided beard with colored beads in it. There is something distinctly calculating in his eyes. In these scanning eyes as he gazes up at the lush forest ceiling there is an understanding of how this dynamic scene works. Knowingly or unknowingly his thoughts trace the strings nature used to weave the universe. You see this just by looking at the human with an untainted eye. You go back further and see an architect of an old world wonder, perhaps the engineer used a strict math, maybe the symbols were just a convenient reminder of an intuitive knowing. As the seven minute visit is reeling to an end, there is a wonder about the math and science of the day. Our traveler wonders: is our math fuzzy and intuitive behind the concrete and logical report of numerical operations or does it speak of a preexisting order that is laying just below the surface of things?
Math and science are as intertwined as the chicken and the egg; consequently one could very well ask which came first? The history buff may be inclined to suggest that his discipline offers an answer, but upon deeper inspection, one would be hard put to tell exactly when science or math emerged as practiced disciplines and likewise one would be urged to define what exactly are mathematics and physics. For instance, could we claim that math started with the first written texts that showcase it? Or would the birth of mathematics be more accurately dated by an anthropological study that tries to identify when counting or addition first entered the landscape of the human psyche as prehistoric man went through a living day? Math and physics are so deeply enmeshed in one another that one could even raise the question of whether mathematics existed as part of reality a priori and if physics is nothing more than a natural outcropping of this fundamental order. Perhaps early man tapped into this preexisting realm and engaged in a sort of mental mathematical processing that came naturally to him. Had he written down what was in his mind, it would’ve been mathematical theory but it seems he didn’t find the need to communicate these musings during this particular stage of existence and thus he fell upon a sort of ad hoc physics as he went along. The question that is burning behind these words is whether math is a man-made concept or a facet of reality and whether physics was birthed from the application of mathematics.

It is an interesting idea to think that math is a part of the very fabric of the cosmos. That is to say, that it is a system that functions in reality without human guidance; that it is there waiting for humans to discover it. To propose that math is a relic that we humans so happened to have stumbled upon adds a compelling element of Einsteinian sacredness to the discipline. It can also be seen as a psychological crutch for
the desire to believe that math is an independent part of the universe. The concept that lends to this element of sacredness is the idea that the mathematical plumbing of the universe has existed for all of time and humans just merely stumbled upon it. The aforementioned idea is well-supported by the seeming perfection of the mathematical model; it is used to describe the motions of the heavens and even the Stock Market. However, let us not forget that planets that revolve in ‘perfect’ geometric balance around the sun will eventually tumble out of kilter. The sun will burn out and gravity will shift as mass leaves the system over eons of emitting radiation. I propose that the perfection of math is only so through the limited view of the human eye and it is a perspective that says that accuracy only matters if there is a ‘practical’/profitable application in sight. If mathematical perfection is out there, it is still waiting silently for its Prince Charming of ultimate and complete discovery.

The idea that math is an integral part of what we agree on as being ‘real’ is slightly dubious considering that there is nothing to measure its existence. For instance, the equation E=MC^2 has not been massed. In physics when particles are detected, it is not by direct observation but rather by the energetic interactions that lead the scientist to believe that the particle is present. The problem with this approach is that there is no evidence for math existing based on its interactions with other parts of the universe as in the case of the measurement of particle activity. To say that math is part of the weave of the totality of existence but harbors no effect is as ludicrous as saying that a particle can not be observed but exists while leaving no energetic trail. As it stands there is no strict empirical evidence to say that math exists outside of our own minds, perhaps someday the subtlety of math’s affects on physical reality will be scientifically determinable.
When one asks himself whether math is really a part of what is ‘out there’ one begs to see math operate in the real world. One understands the concept of a straight line, but has one ever seen such a thing? No piece of wood or steady hand will do. To further consider this idea, let’s first discuss the phenomenon of light. It had been previously thought that light only moved in straight lines, yet even this notion has been debunked since the eclipse of 1919 where it was discovered that starlight is bent via the geometrical elegance of relativity. Then there is the implication that in any gravity field (note that wherever there is space-time there is gravity), that the gravity warps everything that might otherwise be straight including objects of instrumentation. If there was a perfectly straight line out there, how would one ever know? Every ruler to test it by is part of the whole and can not exist outside the realm of cause and effect. There is not a place that we know of that is excused from the rules of the physical universe where measurements could be made against an ideal measuring rod; such is a luxury not granted to humans. It is a nice idea to think that the perfectly straight line exists, that triangles and circles are out there in some ideal platonic realm. It is harder to swallow that the universe might be more funky and wacky than can be described by the inventions of our minds.

Math is a free invention of the human intellect. It works and has such great utility because it is tested in the sandbox of our own making. That is to say, that math developed as a tool of the mind which has immense utility in terms of practical as well as theoretical applications. Math seems to fit reality so well, as it has been able to be applied to the world at large which is also crafted by the human mind (to a large extent). A nice fitting glove need not be confused as a hand, any more than there being surprise at a square hole being able to be filled by the square block that was modeled to fit into it. We
have that square cube now in our hands, math, and the only reason we are amazed and troubled at its ‘fit’ being so perfect, is that we as a species have forgotten the role that our mind has played in creating the world that is currently inhabited by mankind. If man was more conscious of the role he plays in molding human affairs, and also if he had the knowledge of the collective past in the realm of math and sciences, there would be no question as to why math fits the universe’s behavior and motions so well. The mind evolved to such a level of required communication that a world view that necessitated math and science began to develop as a result of this evolution of mind. This viewpoint, which you can also call ‘a certain level of consciousness,’ formed the world and birthed technologies to shape the world. Within the human context, it is no wonder that math and physics seem so adequate to solve problems in this self-created paradigm. However, if one is talking about the universe as it is, beyond the human factor, math and science are not necessarily there.

For all intents and purposes, the belief that math is part of the universe has great power—whether for benefit or ill-fate—but beyond the human sphere, there is nothing in nature that speaks of mathematical perfection. Matter reaches certain states of organization such that consciousness shapes some pattern which we recognize as being mathematic. This is the case in occurrences such as the Fibonacci sea shell or pinecone. The deeper story is that the system we term as ‘the universe’ is one that simply allows neat categorical dichotomies such as chaos and order. Mathematics may be part of the world because we made it so, though it is just one aspect of a greater dynamic. The universe is in constant flux and the creation of math is only one possibility which has been over-stressed in the last two-hundred to three-hundred years. Math is not an integral
part of creation but just one out-cropping of a system which is palpable and perfect in the sense that it appears to fit so seamlessly into our reality.

From the above considerations it follows that physics is just an application of the freely created mathematical concepts which have been regarded as the holy relic of truth and knowledge and which cropped up from human desire for a more ‘knowable’ world/universe. Physics has its historic roots in a theory of tendencies. An example of this type of theorizing is Aristotle’s notion that all bodies that exhibit motion do so in an attempt to return their natural resting place. This concept allows us to explore the exact relationship of these two branches. Reality can be understood conceptually without math but there is greater consistency in the language of numbers. Einstein once spoke while musing about the creation of a new physics later in his life that first the concepts had to be realized and then math would furnish them. Again on this point, how often has it happened in history that a new theory is written and the math is there ready for the fit from decades or centuries earlier? It is like this: without the math, one can barely call a theory hard science, but without conceptual framework of the physics, all math is as useless as a tool bag given to an office clerk. Science right now is in need of a paradigm shift in order to approach true advancement; conceptual physics should be freed from mathematical verification contrary to the fact that it is currently predicated on the existence of mathematical acumen.

If a truly adequate universal physics theory be had, it should be understandable by everyone, whether or not a degree is held in a math department. Math and science are closely related and to be fully operational in the world of human use, as we currently understand the notion of ‘purpose,’ the purpose of math and science is to understand the
world in a more reliable fashion. Though, it could be said, perhaps more realistically, that these two fields are more readily utilized by profit driven advances in the technological sector than by seekers of wisdom and understanding. Understanding is simply tapping into the universe’s intelligence; that which makes the cosmos dance and hum. It is not math or physics but experiential understanding that is responsible for the development of any field, yet in the past few centuries it seems as though innovations have been made that are inherently void of the personal/experiential factor. A consequence of the departure from the experiential aspect of science has been the ensuing destruction caused by technologies and scientific applications made by those who only heed to the cool detachment of the intellectual realm without regard to the implications that effect everyday living. These actions do not mirror the true dynamics exhibited by nature and natural systems and thus they lead to a cascade of negative implications that far outweigh the benefits.

Physics is derived in math and without that foundation it could never have drawn its first breath. Physics really started taking shape when Galileo put math in laymen’s Italian for his countrymen. What was striking and innovative about his work is that it paired observation with mathematics. Before his works were published, by-and-large inaccurate verbal communications were used instead of math. Math became a new language for describing the world. Galileo made a big buck by selling military manuals that taught this language to generals so they could better use cannons with a mathematical precision to have an edge on their enemies. It wasn’t until he traced that trajectory with chalk and found a mathematical correspondence between formula and how the universe works that the two were mated. The hard sciences need experimental verification, and
math is the most ready way of showing a hard proof. Mathematical elegance points to an intelligence behind the ‘spin’ of the inner workings of existence and is an indication that some element is behind the scenes but should not be taken as a test for truth in its own right. Again, the author wishes to stress that math and physics are tools for the mind allowing man to grasp the Totality; that which is both part and parcel; they are not the Totality on their own. A pretty set of equations or even some geometry as beautiful as E-8 may direct the thinker and humanity to look for ‘The More’ that must be behind how everything operates, but they are only signs not destinations in and of themselves. The mathematical paint job will never really grasp the true contours of the big picture. It does, however, offer glimpses to the conscious practitioner.

So what then to make of the dynamic duet if they are only dancing to the tune of some greater piper? If one is to pursue this way of understanding, that is one via math and physics, one must keep in mind that there is a greater substance behind both and that it is of paramount importance. What it is exactly is a mystery and scientific proof can shed light and bring to attention that there is more to everything than it seems. It sounds cliché, but isn’t this the case when you peer inside the atom?—that there is more than first meets the eye. There may be a day when an individual can be correct in saying that math and science are part of the fundamental fabric of this universe. A day where the two fields will have been transformed from their present form into something that better illustrates the unbound element that exists beyond the human realm of intellect—that which is beyond simple human construct. In an historic and environmental lens, the innovations following mathematics and physics have brought much destruction and armed humanity for deeds beyond the scope of its maturity.
If one experiences the greater unity and workings of this universe within themselves, if the ecstasy of an understanding is opened up to them and that person can experience this knowledge for themselves in terms of their own life i.e. experiential knowledge; if this level of development is reached in an individual and they have math that corresponds to it, then that math could be said to be an integral part of existence. The sciences up until today have held their validation to an outside experimental method of Newton which is flawed (but we will not bring this into our discussion). When humanity realizes that math and physics are nothing more than creations of our own making a greater conceptual breadth will be opened up to humanity. Math will remain in tact to the people who see this, yet it will hold less power and will be seen as what it is, a useful, potentially powerful and formidable fabrication of the most creative human intellects, but nothing more. Nature never tolerates more than is needed.