Dear Ms. Wertheim: If you like riddles, you may find the paper below a source of amusement. It does not claim to be science; nor do I believe for a minute that it is possible to construct a true analytic a posteriori proposition, which is why I've appended the prefix quasi- to the title and put a question mark at the end. Rather I think there must be one or more fallacies hidden in the argument somewhere, like in those algebraic manipulations that appear to prove 1 + 1 = 3 by secretly dividing by zero. My hope is that you will find it a fun challenge to put your finger on exactly where it goes wrong.

A Quasi-Analytic A Posteriori Proposition?

By Luke Lea

Can a statement be true by definition and at the same time tell us something about the factual state of the world that did not necessarily have to be true? That is, can a statement be true both analytically and a posteriori? In this paper we construct a proposition that on its surface appears to be true in both of these senses. But because we think it can only appear to achieve this paradoxical result, we offer it as an example, not necessarily unique, of a new category of sentence which we call quasi-analytic a posteriori.

I

The subject of the statement is that 'stuff' we call capital, which for the purposes of this discussion we define as the collection of all the physical tools—including complex tools, which we call machines—that exist in the world at any given point in time (i.e., physical capital) together with all of the practical knowledge and skills required to make and use those tools that are incarnate in the brains and bodies of the people who are alive at that point in time (i.e., human capital). In other words, capital is defined as existing technology.

Now a physical tool is by definition a human artifact that in the service of human wants saves more time and effort than was required to make it in the first place. The amount of time and effort saved over the useful life of a tool is a measure of its value, and is ultimately the source of the phenomenon we call interest.

Given that tools are human artifacts, it follows that labor is prior to capital both historically and logically (as Lincoln once observed), since without labor no tool could come into existence. Before the first primitive tools were fashioned out of wood and stone—which is to say, before *homo faber,* the tool-making animal, first appeared upon the earth—our biological ancestors lived from hand to mouth just as most animals do today.

Because a tool is a means to an end and not an end in itself, the production of tools requires sacrifice (of time and effort) in the present for the sake of a better (richer, easier, safer, healthier, longer, more pleasant) life in the future. It follows that every tool embodies in its physical form (i.e., in its three-dimensional shape and material composition) both *intentions* about the future and *sacrifices* made in the past. Strictly speaking our tools *re-embody* these intentions and sacrifices since they were first embodied in the brains and bodies of the people who did the intending and who made the sacrifices that were required to bring them into existence.

A material sacrifice—which can also be thought of as a giving up or a doing without over some period of time—can be either voluntary or involuntary in nature, depending on whether it is made of a person's own free will or is compelled by another who has the power to compel. In view of the fact that conquest and servitude have been the lot of most of humanity throughout most of recorded history, it is reasonable to suppose that much of the capital that existed in the world before modern times (especially if we include the tools of war) was involuntary in origin.

Now there is no law of nature that requires a tool be replaced when it wears out. For this reason it will always be tempting for a society (or a family) to live off its capital—i.e., to decide to not replace its tools as they wear out—because that will allow for the greatest possible satisfaction of wants in the present. For that reason even the bare maintenance of capital over time entails sacrifice (a foregoing or doing without), often on the part of one generation for the sake of the next.

In addition to serving human wants directly, a tool can be used to manufacture other tools, which leads to our having more tools than would be possible if every tool were fashioned entirely by hand (which of course they all were in the beginning). Modern machine tools in particular (which grind, bore, cut, and shape metal) are specialized for that very purpose. Many of the earliest machine tools were in fact developed for the mass production of steam engines (and were themselves driven by steam!). They were also used to manufacture the replacements of the new textile machines (Cartwright's loom, the spinning Jenny, etc.) that touched off the Industrial Revolution, those inventions being originally made out of wood. Meanwhile steam engines were also used to mine coal—including the very coal that they burned—the pumping water out of coal mines being the purpose for which they were originally developed.

The steam engine is thus an exceptionally interesting invention in the history of capital. For by tapping a new and virtually inexhaustible source of energy (fossil fuels), it cracked the ceiling of economic development that was possible in a world in which water, wind, and muscle (both animal and human) were the only prime movers. And so it set in motion a self-feeding process by which businessmen invested and reinvested capital in a never-ending stream of new technological inventions, leading to exponential growth not only in the volume and variety of goods and services produced, but in the size and complexity of the capital stock itself.

With this background we can now construct a proposition that, however controversial it may seem at first sight, is nonetheless tautologically true:

Capital is the accumulated crime and sacrifice of centuries, plus interest.

Why is this a tautologically true statement? Because, given our definition of capital, it covers all of its logically possible sources—our tools are created as a result of either voluntary or involuntary sacrifice on the one hand, or as a result of business investment on the other—and because it says nothing about their relative importance.

That it does say nothing about their relative importance is the crucial point here. Otherwise it would have been making an empirical claim that, however ill-defined (given that involuntary sacrifice in one generation may become voluntary in the next, and that investment itself involves sacrifice), may or may not be supported by the evidence. This would have been the case, for example, had it stated that violence, slavery, and other forms of involuntary servitude were relatively more important in the period leading up to the Industrial Revolution than afterwards; or that the capital created in the old Soviet Union as a result of the crimes committed under Stalin, or through wholesale graft and corruption in communist China more recently, are responsible for relatively small shares of the world's total stock of capital today. But it says nothing of the sort, which is why it remains an analytically true statement that is entirely empty of empirical content.

II

Having constructed one analytically true statement about capital — that it is the accumulated crime and sacrifice of centuries, plus interest— let us see if we can construct another one, only this time basing ourselves on a purely logical relationship that exists between capital and that spirit or ethic of self-sacrifice for the sake of a better life in the future (both in heaven for the individual after death, and here on earth at some future epoch in history) that we see depicted in the life and teachings of the historical Jesus.

That the Jesus we see depicted in the Bible does in fact teach self-sacrifice for the sake of a better life in the future is not to be doubted based on the record we have: "Take up the cross and follow me," "Resist not evil," "Make your life a living sacrifice," "If a man takes your coat, given him your shirt likewise," "It is better to give than receive," "There is no greater love than if a man will lay down his life for a friend," etc.. This is true regardless of whatever else he is depicted as saying or doing, and whether or not the record we have is historically accurate—or even whether the historical Jesus existed. It is merely a statement about the meaning of words.

Now the argument we want to make is that capital re-embodies or re-incorporates or re-incarnates (we will use all three words interchangeably as synonyms) that spirit or ethic of self-sacrifice for the sake of a better life in the future that Jesus is depicted as teaching by precept and example, but we want to do it in such a way that it encompasses all the sacrifices ever made anywhere in the world at any point in time (including BCE and even prehistory) that have contributed to the existing capital stock of humankind, and not just those which may have been inspired either directly or indirectly by the biblical depiction of the life and teachings of the figure of Jesus.

The only way to do this is to give it a proper name and to define it in precisely those terms, to include all sacrifices ever made anywhere at any time, voluntary or not, that have contributed to the existing capital stock of the human race, keeping in mind that whenever we use this name from now on in this paper it means "exactly what we say it means, neither more nor less," to quote Humpty Dumpty in *Alice in Wonderland*. We will therefore call it "Christ," which yields the trivially true (because empty) proposition that capital is the re-embodiment (or re-incorporation or re-incarnation) of Christ.

Before we proceed any further it is important to note that this is by no stretch of the imagination a theological, metaphysical, or religious statement. It says (and assumes) nothing about the existence or non-existence of God (whatever that might conceivably mean), the possibility of life after death or of rewards in the next life (again, however those words might be interpreted), the reality of miracles, the doctrine of the Trinity, or anything else involving religious faith or belief. It is merely a statement based on a definition of terms that any reasonably intelligent atheist should have no trouble accepting.

III

Let us now switch gears and consider a special class of a posteriori propositions that arise in connection with riddles—but only riddles of a certain type, namely, those that are based upon real world metaphors and not upon puns or mere plays upon words

.

The most famous example is the riddle of the Sphinx in Sophocles' play *Oedipus Rex*. Recall the question asked by the Sphinx was what walks on four legs in the morning, two legs in the afternoon, and three legs in the evening? The correct answer was man, who crawls on all fours as a baby, walks on two feet in middle age, and walks with a crutch at the end of his life.

Here is another ancient Greek example:

"A blackened lump am I and fire begat me.
My mother was a tree on mountain steep.
I save from wounds the chariot of the sea
If my sire melts me in a vessel deep.
What am I?"

The answer is pitch, used for caulking ships.

Here is yet a third example of the type of riddle we are talking about, also Hellenic in origin:

A wingless bird am I, fleeting to heaven from earth.
Each eye that meets me weeps, but not from grief.
In thin air I vanish at my birth.
A blackened lump am I and fire begat me.
What am I?"

The answer is smoke.

There are two things that distinguish riddles of this type. The first is that the correct solution is always empirical in nature, referring, however figuratively, to known facts about the material world. The other is that the correct solution sounds "correct" as soon as (or very soon after) you hear it, again because it corresponds to readily identifiable human experience. Thus in the case of the riddle of the Sphinx the correct answer was man because elderly people really did go about using crutches in the time of Sophocles (whereas nowadays they would be more likely to use wheelchairs or walkers, in which case they would be described as walking on either zero or six legs). This is what makes the solutions to riddles of this kind a posteriori in nature. Their truth value arises only "after the fact," which is what the Latin phrase literally means.

Let us now return to the second to the two analytically true statements we constructed above to see whether, by defining the word Christ in the precise way that we did, we may have coincidentally solved a riddle or set of riddles posed in some of Jesus's parables and in a number of other well-known tropes and images that are traditionally associated with the so-called second coming of Christ. In other words, in the same sense that we can say that it is the re-embodiment (or re-incarnation) of Christ, what else can we say about capital? In no particular order, we can say:

I. It is the tree of life — its fruit is livelihood (Like Jesus, it came "that we might have life and have it more abundantly".)

II. It is the king of kings — capital rules nations (Having determined the outcome of two World Wars and the Cold War, it provides the means by which we can create a new system of trade, diplomacy and international finance in which the right of conquest is no longer the accepted way of the world.)

III. It is the world's ransom — people are free today because we now have machines to do the work that slaves and serfs used to perform

IV. It is like a treasure buried in a field — our ancestors dug it up out of the ground starting with their bare hands.

V. Before Abraham was, I am — the process of capital accumulation begins before history began.

VI. It is a pearl of great price — the accumulated crime and sacrifice of centuries, plus interest

VII. It is the philosopher's stone — though made of base metal (largely) it is more precious than gold, producing the things that give to gold (along with all other forms of money) their value

VIII. It is like a grain of mustard seed — a single penny invested 2000 years ago at compound interest could be worth as much as all the capital in the world today, which can be envisaged as a tree, namely, the tree of capital.

IX. It is like a thief in the night — it came but nobody recognized it for what it was

X. It is brighter than the sun and eclipses the moon — literally true in the case of hydrogen bombs and the Apollo moon program

XI. It comes through the clouds with great glory at the right hand of power — again, literally true in the case of the United States Air Force.

XII. It heals the sick and the lame and gives sight to the blind — the miracles of modern medical technology are the eighth wonder of the world.

XIII. Like lightning that lights up the sky from horizon to horizon, it can be seen and heard everywhere at once — modern global telecommunications at near the speed of light

XIV. It is the sum and fountain of all knowledge and wisdom — in addition to human capital (i.e., technological knowledge) which is quite literally incarnate in living human beings, much of modern science is embedded in modern technology, while practically all of human history and literature (including the literature of science and technology) is now encoded on the internet and available for download.

XV. It walks this earth in the form of man — not only can (some) machines move under their own power and be endowed with artificial intelligence, but our tools are morphologically dual (in the mathematical sense) to the shape of the human body that they have been designed to be used by. (A Martian could deduce the shape of the human body just by looking at our tools.) In these ways capital can be seen as a resurrection of the dead, the dead being those who gave more than they got, otherwise known as the saints.

XVI. In the twinkling of an eye, it strikes like a serpent — the shock of recognition of what capital really is comes suddenly, like the solution to any good riddle.

IV

Now of course there is no way to prove that we have in fact hit upon “the” correct solution to what we are here calling the riddle of the New Testament. For given the limitless fertility of the human imagination, there is no telling how many other equally good solutions there might conceivably be, even assuming that a riddle exists. Anyone who is familiar with the history of riddles and jokes knows about this. So we will conclude the argument by looking at the Parable of the Talents as we have it in the gospel of Matthew:

14 *For the kingdom of heaven is as a man traveling into a far country, who called his own servants, and delivered unto them his goods.*

15 *And unto one he gave five talents, to another two, and to another one; to every man according to his several abilities; and straightway took his journey.*

16 *Then he that had received the five talents went and traded with the same, and made them another five talents.*

17 *And likewise he that had received two, he also gained another two.*

18 *But he that had received one went and digged in the earth, and hid his lord's money.*

19 *After a long time the lord of those servants cometh, and reckoneth with them.*

20 *And so he that had received five talents came and brought another five talents, saying, Lord, thou delivered unto me five talents: behold, I have gained beside them five talents more.*

21 *His lord said unto him, Well done, thou good and faithful servant: thou hast been faithful over a few things, I will make thee ruler over many things: enter thou into the joy of thy lord.*

22 *He also that had received two talents came and said, Lord, thou delivered unto me two talents: behold, I have gained two other talents beside them.*

23 *His lord said unto him, Well done, good and faithful servant; thou hast been faithful over a few things, I will make thee ruler over many things: enter thou into the joy of thy lord.*

24 Then he which had received the one talent came and said, Lord, I knew thee that thou art a hard man, reaping where thou hast not sown, and gathering where thou hast not strawed:

25 And I was afraid, and went and hid thy talent in the earth: lo, there thou hast that is thine.

26 His lord answered and said unto him, Thou wicked and slothful servant, thou knewest that I reap where I sowed not, and gather where I have not strawed:

27 Thou oughtest therefore to have put my money to the exchangers, and then at my coming I should have received mine own with usury.

28 Take therefore the talent from him, and give it unto him which hath ten talents.

29 For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath.

30 And cast ye the unprofitable servant into outer darkness: there shall be weeping and gnashing of teeth.

What impresses the modern reader most forcefully about this parable no doubt is the next to the last line: "*For unto every one that hath shall be given . . . but from him that hath not shall be taken away even that which he hath."* This strikes many people today as manifestly unfair, while to others it is a sad commentary on the way of the world. But what we have here in actual fact is something far more significant: a clear statement of the law of capital markets as it operates on Wall Street and elsewhere in the field of mergers and acquisitions, upon which the efficiency of modern capitalism depends. This makes it one of the earliest and most important documents in the history of economic thinking. Is this a mere coincidence, or is it evidence of genius and intent?