

# Progress in history: Using some ideas in theoretical Physics to adapt linear and cyclical concepts of progress in history

by  
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## Introduction

The movement of human experience from one point in time to another is elemental to the study of history.<sup>1</sup> Progress in history has been analysed in linear, cyclical and sequential frames of reference, which have been refuted by historians for various reasons. Another method not yet employed by historians is to look at conceptualising the effect of the combination of the theories of relativity and quantum physics by Stephen Hawking in his work entitled: *A brief History of time*.<sup>2</sup> This is not to suggest that history follows pathways which humans can accurately determine as some of the laws in physics do. History should propose and motivate itself as a science with its own identity and forms of enquiry but cannot totally remove itself from general scientific discourse.<sup>3</sup> Nor would the notion of a

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1. M. STANFORD, *A companion the study of History* (Blackwell Publishers, Oxford, 1997), p.182.
2. *Ibid.*, pp.188-189.; M. SACHS, "On Hawking's 'A brief history of time' and the present state of physics" in *British Journal of Philosophy of Science*, 44 (3), p. 545; J. TOSH, *The pursuit of History* (Second edition, Longman, Harlow, Essex, 1991), pp.11-18.
3. C. LLOYD, *The structures of History* (Blackwell Publishers, Oxford, 1993), pp.19 and 25.

complete idea of progress in history be feasible.<sup>4</sup> But what is progress in history and can one truly talk of it as historical progress? Progress means to move forward, to advance, to develop. But what of regression, decay and backwards movement of past human experiences? Progress infers movement from bad to good, but what about movement from good to bad? Is there always movement in the idea of historical progress? Are there not static concepts and past human experiences, which do not change over time?

The paper will briefly look at the way progress in history has been treated by man in the past and try to combine these concepts with a simplified version of Hawking's conceptualisation of space-time and the movement of history from one point to another. The idea is an exploration into a new meaning for progress in history, but does not provide absolute proof of this in the short time and space allowed here.

### **What is progress in history?**

The concept of progress is a problematic one for historians. To Acton, however, progress meant 'the scientific hypothesis on which history is to be written'. This assumes that history can only be written by those who find and accept that history has direction. With this, society, needs to accept its ability to progress into the future and must then concern itself with its own progress in the past because as Carr puts it:

The belief that we have come from somewhere is closely linked with the belief that we are going somewhere.<sup>5</sup>

But do we not then make a mistake by making these assumptions because the past as we see it is partly an object of the present and faith in progress implies a desire to improve on that past? This is apparent in enlightenment attempts to break with antiquity and particularly the attempts made by the philosophes to exclude the arts from a general march towards progress. The arts were, or appeared, unable to break with the past.<sup>6</sup> Scientific knowledge increasingly presented itself as cumulative progress while culture and art's reliance on the past inhibited modernisation and made imitation incompatible with innovation. Novelty meant decline and not advancement. Both arts and science acknowledged the past for good

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4. B.C. SOUTHGATE, *History: What & Why? Ancient, modern and postmodern perspectives* (Routledge, London and New York, 1996), p. 97.

5. E.H. CARR, *What is History?* (Macmillan, London, 1961), p. 132.

6. D. LOWENTHAL, *The past is a foreign country*. (Cambridge University Press, Cambridge, 1985), pp. 26, 91, 94.

or bad, but science and material civilisation had absorbed and overcome the past.<sup>7</sup>

Progress thus assumes a positive - or march towards betterment - attitude and forgets about decadence, decay and decline. An irreversible 'Wandlungsprozess' by which humans provide an understanding of their present and relate it to the past.<sup>8</sup>

Progress must then assume periods of regression and periods of forward movement without the assumption that advances will start from the same point or move along the same path.<sup>9</sup>

All branches of knowledge share a supposed natural progression rooted in an interest to move from the particular to the general. Theories of progressive change are used to make sense of history as a whole. These theories attempt to explain how historical change takes place and the direction in which that change is going. They attempt to provide the destiny of humans by interpreting and putting meaning to the past. This of course presents the problem of dealing with the inter-relatedness of every area of human experience at a particular point in time.<sup>10</sup> Progress is an abstract concept in which man from time to time pursues a definite goal by resorting to the course of history and not from a source outside it.<sup>11</sup> Or as Bury put it:

[Progress is] a theory which involves a syntheses of the past and a prophecy of the future.<sup>12</sup>

The source of progress in history is social acquisition and can be measured in brief periods of time with the transmission of skills from one generation to another. It can then not mean that all humans will progress equally or at the same rate. To provide then a totality and absolute representation of the human experience becomes daunting and can only allow for a piecemeal approach in providing progress in certain areas of human endeavour.<sup>13</sup>

What then is the basic component of progress in terms of historical action? Two closely connected factors which react to one another are the assumption that history provides humans with the ability to profit from ancestral experiences and that progress in history is based on transmitting acquired assets. Progress would then include both material possession and the ability to change, use and master the natural environment. But what about progress in the ordering and mastering of society, and the social environment? Has this not shown regression? Few would

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7. *Ibid.*, p. 295.

8. D. VAN LAAK, " 'Am Anfang war das Wort.. Über die theorien zum beginn von geschichte" in *Saeculum*, 40 (3-4), 1989, p. 297.

9. E.H. CARR, *What is History?* p.116.

10. J. TOSH, *The pursuit of history*. pp.155-156.

11. E.H. CARR, *What is History?* p.119.

12. *Ibid.*, p.114.

13. *Ibid.*, pp.113-116.

deny that the evolution of man as a social entity has lagged far behind advances in technology. Society can, however, not survive without the idea of progress because some sacrifice is made by present society to provide for what they see as a better future for their children. This presupposes that man is not and will never be content with his present state unless he can extrapolate this into the future.<sup>14</sup>

### **Linear concepts of progress in history**

Linear concepts of progress in history manifested themselves in both religious and secular domains. Religious philosophers of the middle ages saw history as a straight transition from Creation to the Last Judgement. It presupposes a beginning and an end. From the beginning to the end of the world. It justifies and maintains itself in an abstract, invisible and divine providence, which controls progress in history and hence human destiny.<sup>15</sup> The early state of man caused as much debate as did the end of the world. Biblical writing either had to be understood literally or a way found for it to be interpreted so that humans could understand the concept of a linear progress in history. This resulted in attempts to pin exact time spans to human history and its progress. Creation and the progress of human history was calculated to span 6000 years with the 7th millennium heralding the New Kingdom of God. Man assumed a spiritual move from a discontented, harsh and unforgiving earthly hell to a blissful state in paradise. Even important events, like the birth and crucifixion of Christ, which heralded the salvation of mankind, was portrayed as cruel barbaric points on the pathway to ultimate happiness by God's side. These were not seen as deviations or regression but as part of a straight line in which history moved.<sup>16</sup> The Israelites provided an idea of progress in history, which saw history as a series of cycles on a linear path. Patterns could be distinguished in the rise and fall of society. Mankind would start out on the right path, move to societal and spiritual highs and then be brought down by their own decadence, be chastised by the supreme ruler and start again.<sup>17</sup> Was this not just a way for the ruling elite to justify the existence of abject misery and poverty or can it be seen as the answer to progress in history? In fact was this justification not the primary reason for portraying progress in History?

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14. *Ibid.*, pp.117-119.

15. J. TOSH, *The pursuit of history*, p.155; D. VAN LAAK, "'Am anfang war das wort...'. Uber die theorien zum beginn von geschichte" in *Saeculum*, 40 (3-4), 1989, pp.296,298.; G.R. ALLEN, Handleiding vir Filosofie van Geskiedenis (Unpublished monograph, Rand Afrikaans University, Johannesburg, 1994), p.10.

16. D. VAN LAAK, "'Am anfang war das wort...'. Uber die theorien zum beginn von geschichte" in *Saeculum*, 40 (3-4), 1989, pp.296, 298 and G.R Allen, Handleiding vir Filosofie van Geskiedenis, p. 10.

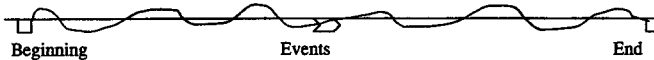
17. G.R. ALLEN, Handleiding vir Filosofie van Geskiedenis, pp. 10-11.

The 18th century saw the secularisation of this belief in moving from bad to good. Progress in history was seen as the intellectual and material improvement of mankind. Reason would triumph and provide future happiness for humans. Mankind was involved in a process of rational thought, which would see the past and the future moving to a higher level than before.<sup>18</sup> The difference between scholastic theories of progress in history and that of the enlightenment lies in the negation of the simplistic 'Modellhaftigkeit' of past histories. Enlightened scholars saw complications in problems of sequence and the singularity of events. The possibilities of discovering forward movement in historical progress was their main aim in making sense of the past, present and future.<sup>19</sup> New discoveries and ideas about nature replaced, to a greater degree, scholars rationalisation of divine providence to attempt explanations of progress in History along evolutionary lines. This went with providing laws for History as the natural sciences provided laws for nature. This outlook was modified to create national identities where certain nations were seen as the inheritors of Darwinian evolution and striving to become more advanced.<sup>20</sup> This assumed that mankind, consciously or subconsciously, was moving in a specific direction. This was mostly seen as the correct direction from bad to good, from the lower to the higher. Historians developed a sense of their own sense of direction and moral involvement in this idea of progress.<sup>21</sup>

The history of nature and human endeavour needed however to be separated according to Kant. For him progress in human history was seen in the new freedoms espoused by the enlightenment. The beginning of history saw man created as a slave to nature and only after thousands of years freed from this state into one where he could rule himself as a rational being.<sup>22</sup> This was seen as progress in history. But does man have this supernatural ability to progress? Does fate not take a hand? Is there something to be said for divine providence in controlling progress in history? Did this resolve the alleged dichotomy between fact and value? Did rationality provide freedom and the answer and clarity to human development and progress in history? Was progress in history freedom from fate and divine providence? Progress in History as freedom still remained an enigmatic concept for Kant because:

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18. J. TOSH, *The pursuit of history*, p.155; D. VAN LAAK, " 'Am anfang war das wort...' Uber die theorien zum beginn von geschichte" in *Saeculum*, 40 (3-4), 1989, p. 298.
19. D. VAN LAAK, " 'Am anfang war das wort...' Uber die theorien zum beginn von geschichte" in *Saeculum*, 40 (3-4), 1989, p. 298.
20. *Ibid.*, pp.299,302; J. TOSH, *The pursuit of History*, p.155.
21. E.H. CARR, *What is History?* p.125.
22. D. VAN LAAK, " 'Am anfang war das wort...' Uber die theorien zum beginn von geschichte" in *Saeculum*, 40 (3-4), 1989, p.298. See also reference note 7 on Friedrich Schiller's extension of Kant's ideas.

Die Geschichte der Natur fängt also vom Guten an, den sie ist das werk Gottes; die Geschichte der freiheit vom bösen, denn die ist Menschenwerk. Fur das individuum, welches im Gebrauche seiner Freiheit bloss auf sicht selbst sieht, war bei einer solche Veränderung Verlust; fur die Natur, die ihren Zweck mit dem Menschen auf die Gattung richtet, war sie Gewinn.<sup>23</sup>



Sequential, spiral or, ebb and flow.

Fig.1. Linear progress in history.

### Cyclical ideas of progress

Classical ideas of progress in history presupposed its cyclical nature. This followed from Plato's ideas of human society lifting itself out of primitive barbarism and into an era of cultural development which reaches a peak at some point. Nature then overwhelms this civilisation and leaves only primitive beings who start again onto a new path of cultural upliftment. This basic idea was expanded in the 19th century by Marx based on the cycles developed by Hegel. Hegel's idea of the dialectic presents itself as a basic cycle in which progress or advance is expressed in contradiction. Both see 'Aufhebung' as the driving force in history. For Hegel this entails ideal in 'geistesgeschichtlichkeit' while for Marx it entailed materialism in societal structures.<sup>24</sup> Like the linear concepts it claims to find direction, but on a larger scale to include the whole historical process.<sup>25</sup> Cyclical theories of progress in History also presuppose a definite beginning and a definite end.<sup>26</sup> This obviously presents us with a number of problems. Cycles, as with linear concepts, can veer off course or not follow their predicted paths as the end of communism in Russia and other East-bloc countries showed. Where and how do we determine what the

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23. D. VAN LAAK, "Am anfang war das wort... 'Über die theorien zum beginn von geschichte'" in *Saeculum*, 40 (3-4), 1989, p.299.
  24. G.R. ALLEN, *Handleiding vir Filosofie van Geskiedenis*, p.10.; M. STANFORD, *A Companion to the study of History*. pp.270-271.; D. VAN LAAK, "Am anfang war das wort... 'Über die theorien zum beginn von geschichte'" in *Saeculum*, 40 (3-4), 1989, p. 303.
  25. J. TOSH, *The pursuit of History*, p.172.
  26. D. VAN LAAK, "Am anfang war das wort... 'Über die theorien zum beginn von geschichte'" in *Saeculum*, 40 (3-4), 1989, p. 303.

beginning and end of history or an event is?<sup>27</sup>

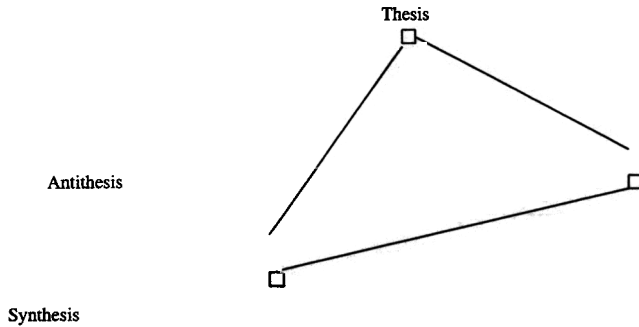


Fig. 2. Cycles - based on Hegel's dialectic.

### The balloon

Cycles in history were part of antiquity and survived till the turn of the century in more complex forms like Vico's spiral or Nietzsche's ideas of a perpetual ebb and flow. For the historian the end of progress is not yet evolved and is something still infinitely remote. Pointers towards it come in sight only as we advance.<sup>28</sup> Generally the linear is preferred above the cyclical in current thinking.<sup>29</sup> What few historians are exposed to, however, is the mathematical concept of a straight line being part of a circle [or ellipse] and a circle seen as part of a three-dimensional globe. Theoretical physics adds the fourth dimension of time to this, which further complicates our conceptualisation of the universe and history.<sup>30</sup> History like the universe can be seen as unbounded but finite, with no beginning and no end, expanding or contracting like the skin of a balloon. There is thus no finite beginning or ending to progress in history as the linear and cyclical concepts of progress presupposed. This applies to progress in history as a whole and its smaller entities [events] because both are integral to one another in space-time.<sup>31</sup>

27. *Ibid.*, p.305.; M. STANFORD, *A Companion to the Study of History*. p.1.

28. E.H. CARR, *What is History?* p.115.

29. G.R. ALLEN, *Handleiding vir Filosofie van Geskiedenis*, p.10.

30. S. HAWKING, "Knowing no boundaries" in *The Sunday Times Lifestyle*, 23 August 1998, p.7.; M. STANFORD, *A Companion to the study of History*. pp.188-189.; M. Sachs, "On Hawking's 'A Brief History of time' and the present state of physics" in *British Journal of Philosophy of Science*, 44 (3), 1993, p. 545.

31. J. GRIBBIN, "Hawking's Universe" in *The Geographical Magazine*, Jan.1985, p. 636.; E.H. CARR, *What is History?* p.114.

This three dimensional concept of a globe occupying space is placed within the fourth dimension of time [real time as in history as event or imagined time as in history as narrative]. Time must be introduced to reconstruct the notion of progress in history within the three dimensions of the globe. It must be assigned a time sequence.<sup>32</sup> The globe becomes an ever expanding concept which may reach a point of overstretch, burst and contract in on itself only to start expanding again. This analogy is as true for the physical universe as it is for progress in history.<sup>33</sup> This would suggest that basic cycles and quantum leaps to other points or dimensions, in both the universe and history, are elemental to the universe and its conceptualisation in history. The infinite and unobtainable [at least for humans in the present] computation and the endless possibilities of interpretation which the universe and history are capable of, however, ensure that the possibility of the path of any particular cycle moving over the same point is remote. A point in physics is a very small particle with no dimensions. This can be connected successfully to a very small point or event in history.<sup>34</sup> This means that progress in history not only shows itself in space-time but also works against it as Hegel's ideas of the contradictory nature of cyclical progress suggests.<sup>35</sup>

This would then lead to adaptation or transformation of Hegel's ideas of cognition [the activity of knowing, rational thought] in the development of the thinking spirit advancing on a particular space-time path to intellectual comprehension, feeling and imagination. As an organic whole, history and the universe "may be seen as thought thinking itself" [self-consciousness] and constantly using aspects of what it has picked up on a particular path to 'get to know itself' and the projection of this into interpreting [by feeling, comprehension and imagination] a new pathway, or jumping to a new dimension, on this ever expanding balloon, for the past, present and future.<sup>36</sup> The total order [and by implication chaos] of the universe and history is contained within each region of space and time on this expanding balloon. This includes past present and future in an 'implicate order' which unfolds and folds in

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32. M. STANFORD, *A Companion to the Study of History*. p.1.

33. S. HAWKING, "Knowing no boundaries" in *The Sunday Times Lifestyle*, 23 August 1998, p.7; M. STANFORD, *A Companion to the Study of History*, pp.188-189; M. SACHS, "On Hawking's 'A Brief History of time' and the present state of physics" in *British Journal of Philosophy of Science*, 44(3) 1993, p. 545; W.B. DREES, "Quantum cosmologies and the 'beginning'" in *Zygon*, 26, September 1991, p. 379.

34. J. GRIBBIN, "Hawking's Universe" in *The Geographical Magazine*, Jan. 1985, p. 636; S. HAWKING, "Knowing no boundaries" in *The Sunday Times Lifestyle*, 23 August 1998, p.7.

35. D. Van Laak, "'Am anfang war das wort...'" *Über die theorien zum beginn von geschichte* in *Saeculum*, 40 (3-4), 1989, p. 311.

36. J. GRIBBIN, "Hawking's Universe" in *The Geographical Magazine*, Jan 1985, p. 636.; M. STANFORD, *A Companion to the Study of History*, pp. 262-263.



on itself continuously to cause both existence and non-existence.<sup>37</sup> Confidence in predicting the future is limited by the axiom that history never repeats itself. Additional factors which cannot be predicted and do not show the same consequences may change how the future is shaped.<sup>38</sup>

But why should this be so? Why can humans not show the direction of progress in history accurately? In my mind this is rather simple. The idea of progress should rather be seen as the universe and history moving from a particular point in space-time to another point which may or may not intersect or come close to the point from which it came. There is in other words a basic law for all universal and historical phenomena but these have a tendency to reinterpret themselves in ways which humans cannot or are unable to predict at present. The advent of computers has clearly shown this where only now humans can see what fractal geometry entails. A basic law is provided with as many interpretations as it is mathematically capable of producing.<sup>39</sup>

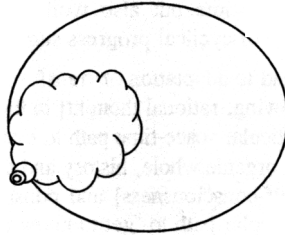


Fig. 3. Progress as a more complex expanding balloon

## Conclusion

If progress in history could be reduced to the linear then time travel would not be such a problematic issue for humans. Likewise with cyclical notions. It is precisely because of the complexity of progress in history seen as an expanding and contracting balloon that time travel is such a practical, although not theoretical, puzzlement to physicists, historians and humans in general.<sup>40</sup> We must also accept that humans would never achieve an advanced and static progress in science, technology and social concepts because of this ballooning of and reinterpretation of

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37. K. SHARPE, "The origin of the Big Bang Universe in Ultimate Reality with special reference to the Cosmology of Stephen Hawking" in *Ultimate Real Meaning*, 20, March 1997, pp. 65-66.

38. J. TOSH, *The pursuit of History*, p.17.

39. K. SHARPE, "The origin of the Big Bang Universe in Ultimate Reality with special reference to the Cosmology of Stephen Hawking" in *Ultimate Real Meaning*, 20, March 1997, pp.62-63.

40. D. Lowenthal, *The past is a foreign country*, pp.14-15.

the basic laws.<sup>41</sup> What these laws are or should be I will leave to your judgement. As an example though, studies of revolutions [the French, Russian and Nazi revolutions] have shown them to have basic patterns [or laws if you will], but these are reinterpreted by each successive revolution. Each then leaves its own imprint on the pathways of history.

Unlike the linear and cyclical concepts the 'balloon' has no real beginning or end. The balloon may then present us with a new notion of how linear and cyclical concepts may in fact work together in a more complex construct of 'progress in history' or rather movement from one point on the space-time continuum to another. The historian who looks more closely at the reciprocal process where progress in history is achieved with the interaction and reaction of facts and values as an integral part of the balloon may succeed in understanding why prediction, pathways and other concepts in progress are so difficult to pinpoint.<sup>42</sup> This is perhaps where Hawking's ideas may be successfully put to use by philosophies of history. All theories of Progress in History aim to create order out of perceived chaos. Should we not as historians rather look at ideas in theoretical physics and fractal geometry which propose that this chaos has an order of its own not as yet capable of being calculated and predicted?

## Opsomming

### **Vooruitgang in geskiedenis: Die benutting van sommige idees in teoretiese fisika om liniêre en sikliese konsepte van vooruitgang in die geskiedenis aan te pas**

Beweging van menslike ervaring vanaf een punt na 'n ander vorm die kern van geskiedenisnavorsing. Vooruitgang in die geskiedenis word as liniêr of siklies gesien. Om verskeie redes is daar afstand gedoen van hierdie sienswyse. Waarna historici nog nie gekyk het nie, is die verbinding van idees soos quantum spronge en die oneindigheid van die fisiese heelal. 'n Kort uiteensetting van sikliese en liniêre sienings van die geskiedenis word hierin weergegee. Die studie pogg dan ook om die idees te verbind met dié van

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41. S. HAWKING, "Knowing no boundaries" in *The Sunday Times Lifestyle*, 23 August 1998, p.6.

42. E.H. CARR, *What is History?*, p.131.

## *Viney*

Hawking en ander skeikundiges oor die heelal. Historici verkies oor die algemeen liniêre konsepte. Historici behoort vertrou te wees met 'n reguit lyn [oftewel liniêre konsepte] as deel van 'n sirkel [siklusse] en 'n sirkel as deel van 'n bal voordat hulle bloot met liniêre konsepte tevrede jkan wees.

'n Algemene idee oor die verloop van geskiedenis word voorgestel deur te suggereer dat daar na 'n ballon gekyk moet word wat gedurig besig is om op te blaas [soos die groter heelal] en op 'n stadium weer afblaas [soos kernfisici beweer vir die heelal geld]. Daar sal dus algemene geldende reëls vir die verloop van die geskiedenis wees (soos dié in kernfisika). Dit sal tog in elk geval gedurig herinterpreteer word – soos die rekenaartegnologie in die studie van 'fractal geometry' bewys gelever het.