

Wonder as Narrative

William Mathews
Milltown Institute

I

In a recent article Ronald Hepburn clearly acknowledges that wonder is an important human attribute, but one that is more readily affirmed than studied by philosophers.¹ Certainly few modern philosophers have made it a central topic in their work. Hepburn's reflections are wide ranging. He recognises that wonder is involved somehow in the cognitive, ethical, religious, and aesthetic dimensions of human experience. Its possible objects are vast in number. He poses the question, to what extent is it an attitude of awe before an object which cripples the intellect, or an intellectual desire? Is it not all the while in danger of degenerating into idle and uncommitted curiosity rather than of finding and resting in an object worthy of prolonged attention, a moral question which all academic communities have to take seriously. Is wonder, in the pursuit of its goal, in danger of totally replacing mystery by explanation? Hepburn concludes his remarks with the assertions that (a) wonder needs to be taken more seriously as a topic for reflection by the philosophical community, and (b) the educational circumstances appropriate to its proper fostering should be explored.

Wonder is such a pervasive and yet intangible human attribute that it is difficult to know where an investigation of it ought to begin. One possible point of entry could be reflections on the lives of people like Socrates, Darwin, Einstein, Buber, and so forth. They seem gripped by an insatiable wonder. Their lives are the great images of it at work. They contrast startlingly with the apparent massive uncuriosity of so many adult human beings. Equally, attention might be turned to the way in which wonder emerges and manifests itself at different stages in the human life time. For within the life time as a whole it seems to emerge and be experienced in many different ways, awakenings, periods of growth and flowering, periods of apparent stagnation, of atrophying, of stops and starts, of underground growth or movement, of re-awakenings. It can manifest itself initially in the emergence of the robust wonder of the child, so robust that it can wear adults out. In some school education, unusual wonder can be deemed a problem in the student to be educated out of him or her. It can give way to the later paralysed wonder of the adolescent caught up in a bewildering matrix of personal desires and social circumstances. In early adulthood it can be burdened down by traditional social knowledge and customs, the way things are. Perhaps in middle and late adulthood it can emerge and flower again. Jaspers and Maslow between them seem to hold that children, the insane, and the elderly are the true philosophers.²

Recognising these and the many issues raised by Hepburn, the present essay sets out to explore one particular aspect of the complex human attribute of wonder.

Selectively it will view wonder as a quest which awakens and unfolds essentially over time. That quest nature is most readily appreciated through a study of the lives of intellectual explorers such as Einstein, Buber and Darwin.³ Through the experience of the loss of his mother Buber's wonder awakened to the problem of the meeting of persons, a problem that was to preoccupy him for a large part of his life. Einstein as a child was baffled by the behaviour of a compass. Later he absorbed himself in Euclidean geometry. In these early experiences we see a preparation for his prolonged wrestling with the problem of relativity. On the voyage of the Beagle Darwin experienced variations in species that awakened his wonder to a problem that was to haunt him for years. Those awakenings were the awakenings of a quest.

Wonder does not take place all at once. Granted that, the question arises, is the quest and its unfolding in time arbitrary, or is it characterised by some kind of pattern? While unfolding it seems to start through awakening, surge with enthusiasm, run into confusion, become blocked and stop, wait, resume through some chance inspiration, and so forth, and hopefully, eventually move towards resolution. As it is unfolding in any particular quest it might be difficult to apprehend that structure. The suggestion will be that in retrospect, through the focusing of memory, it can be seen to be narrative or story structured. It would appear that wonder is not generally recognised as having a narrative structured in time. It is the aim of the present study to establish that connection.

Central to the study is an appreciation of the significance of time, specifically of time spans in a life, and ultimately of the life time itself. Some studies of mental faculties - of the senses, imagination, active intellect, for instance; or of categories of thought and language use, do not seem to consider as significant the fact that all mental and linguistic activities are parts of the lifetime of the human person. In Aristotle's De Anima the primary task seems that of differentiating the different mental faculties, the various senses, imagination, and intellectual operations.⁴ In Kant's Critique of Pure Reason the basic task seems that of objectifying the complete set of mental categories, and the manner in which they are united with sensible intuition in human knowing.⁵ Both authors recognise that the operation of the faculties or the use of the categories involves time. But their interest in the personal lifetime of which the processes are parts seems secondary, or at least underdeveloped. Many approaches to the study of mental phenomena consider the task that of understanding the particular mental phenomena, the senses, imagination, thought processes or whatever. The fact that the operations of the senses, for instance, are parts of a time span or ultimately a life time is not taken up. The problem of relating the particular mental phenomena to the temporal process of which they are parts, is not resolved. In some instances it is viewed as unresolvable.

In other approaches, those of the genetic epistemologists and of Dilthey, for instance, the basic given is not particular mental phenomena or their expression in language and symbol, but rather the unity of the human life time of which they are parts.⁶ All language use and expressions, all objectifications of the human mind, were for Dilthey parts of the life. Like an autobiographer he considered the totality of language use and expressions as parts of the person's life. For him the meaning of the parts is only to be grasped from the unity of which they are parts just as the meaning of

words in a sentence or of sentences in a paragraph is derived from the unity of which they are parts. Once it is recognised that the basic context for the study of mental operations is the life time of some human person, then the nature of the investigation changes drastically. For now they can no longer be studied atomically, on their own. Rather they must be studied as parts of a wider entity, the life time of the conscious and intentional living of the human person. So there surfaces the very basic and profound question, how are the different mental phenomena interrelated in the life time? In establishing that wonder has a narrative structure in time an element of that question will be addressed.

The problem can be further clarified by considering briefly some of the efforts to resolve it. One possible answer was given by Hume. Mental phenomena in time are a bundle of atomic perceptions.⁷ For Hume the life of consciousness in time is simply a random succession of sensory activities. An alternative answer was given by Hegel.⁸ For him human mental development grows towards an absolute standpoint through a series of dialectical stages. The appreciation of time and development in Hegel is on a quite different level from that found in Kant. A further answer was given by Sartre.⁹ What unites and gives a basic unity to the unfolding of conscious and intentional living is the fundamental project. However one stands on the very different solutions of Hume, Hegel, and Sartre, they do confront us with and clarify the basic philosophical question concerning the relation of the parts and the whole in the unity of conscious and intentional living. All are efforts to understand the interconnectedness or not of mental phenomena in the life time of the human person. That question is valid and unavoidable. Although approaches such as those of Aristotle and Kant might seem to neglect that question, in one sense they have contributed to its resolution. For their works are efforts to clarify the parts of the whole. Once the parts of the whole are clarified the question of their relation within it can be approached. Nor can that step of clarifying the parts be avoided in facing the problem.

These brief remarks on the significance of time help to establish a context from which to approach the speculative assertion of Stephen Crites:

'I want to argue that the formal quality of experience through time is inherently narrative.' (10)

It is a position which contrasts in various ways with those of Hume, Hegel, and Sartre. Yet it is addressed to the same problem. A priori it is no less valid a starting point for the understanding of the time structure of conscious and intentional living than those other positions. Let all begin the race from their different standpoints. By their fruits will the genuine be known. Recognising that people create stories in their lives, (mundane stories), stories which are shaped by the great cultural stories of the time (sacred stories), he is led to assert:

'But consciousness itself is not a blank. Consciousness has a form of its own, without which no coherent experience at all would be possible. ... I want further to propose that the form of active consciousness, i.e. the form of experience, is in at least some rudimentary sense narrative. That is why consciousness is able to mediate between

the sacred and mundane stories through which it orients itself in a world. A square peg would not fit into a round hole. The stories give qualitative substance to the form of experience because it is itself an incipient story.'(11)

Comparing and contrasting the position of Crites with those others would be a major and interesting task. The present interest is more limited. It acknowledges Crites speculation and his inability to ground it.¹² Its goal is to search for some foundation for it. It will argue that wonder in time has a natural narrative structure and that this fact provides a grounding for Crites speculative position.

The life time finds its natural interpretation in an autobiography. Philosophical interest in the nature of narrative and autobiography has come late. The word 'autobiography', J.N. Morris reminds us, first appeared in print in 1809, five years after the death of Kant.¹³ That is not to say that autobiographies first came to be written in the nineteenth century. They are at least as old as and older than Augustine's Confessions. The structure of autobiography itself is not random or arbitrary. An autobiography for Morris is a personal history, 'A narrative of events occurring in time.'¹⁴

What precisely might a narrative be? Is it simply a human fiction, a human construct to give some kind of order or pattern to an aggregate of events so diverse that otherwise they could not be comprehended at all? The structure of a narrative is not arbitrary; it is not like that of a mathematical series or of a probability distribution. It has its own unique and irreducible reality. Why, it might be asked, is this so? Why does autobiography have a narrative structure and not something else? The present suggestion is that it is narrative because it is derivative of and expressive of a much more primordial narrative structure which is the unity of conscious and intentional living itself. The narrative structure which is the autobiography refers to and reflects the narrative structure which is the human life itself. But it never exhausts it. As the philosophical status of the category, life time, is raised, so also will that of autobiography. But much work remains to be done in the field.

The central suggestion of the present essay is that a key element in the explanation of the narrative structure of human consciousness is to be found in the understanding of wonder. Wonder is one possible operation which could ground that structure. If we understand wonder we will understand why consciousness has a narrative structure. It is a temporal operator. It does not occur, in consciousness, all at once. Its unfolding is of the nature of a quest or story in time. The suggestion will be that the operation of wonder over time in conscious and intentional living has a primordial narrative structure. It is extremely important to understand the limitations of the study. It is not concerned with understanding either wonder or narrative. Either of those tasks it acknowledges as enormous. Rather the goal is to establish that narrative and wonder have the same kind of structure. To the extent that one understands the structure of narrative, to that extent will one understand the structure of wonder, and vice versa.

II

If wonder is to have a narrative structure in time, it must occur, not all at once in conscious and intentional living, atomically, so to speak. Rather it, like a narrative, must occur over time. Its operation must have a beginning, middle, and an end. To the extent that wonder can be interpreted as a form of quest, that quest once awakened takes time. The discovery of basic truths is always a story. But wonder does not simply take time. Once awakened it becomes a principle of direction of the growth of the conscious and intentional living of the person in time. The temporal and directive properties of wonder are most readily identified in autobiography and biography. Three lives in particular are helpful in this respect, those of Martin Buber, Charles Darwin, and Albert Einstein.¹⁵ In those lives there can be identified some early experiences which led to the awakening of their wonder. There can be identified a long period of searching for enlightenment under the direction of wonder, and finally a period of resolution.

When he was three, Buber's mother departed on him. He waited expectantly to meet her but experienced a mis-meeting. At the age of four he had a conversation with an older girl on a balcony in which she confidently asserted that his mother would never return again. Later he was to say:

'I suspect that all that I have learned about genuine meeting in the course of my life had its first origin in that hour on the balcony.'¹⁶

The conversation awakened his wonder about the meeting and mis-meeting of persons. It was a central formative experience in his intellectual quest. In his 'Autobiographical Fragments' Buber recounts a series of subsequent experiences of meetings and mismetings, with his grandparents, a horse, with Herchler who asked him 'Tell me: Do you believe in God?', and with a young man who conversed with him, but who was not heard.¹⁷ In this way we can see in his life not simply an awakening, but also a direction. The awakened interest recognises these experiences as related and significant.

Before the voyage of the Beagle Darwin was something of a fundamentalist in the matter of explaining the origins of organic species. His observations of the variations in animal species in the Galapagos Islands led to a new awakening of his wonder on the matter. 'When I was on board the Beagle I believed in the permanence of species, but as far as I can remember, vague doubts occasionally flitted across my mind. On my return home in the autumn of 1836, I immediately began to prepare my Journal for publication, and then saw how many facts indicated the common descent of species, so that in July 1837, I opened a note-book to record any facts which might bear on the question. But I did not become convinced that species were mutable until, I think, two or three years had elapsed.' (18)

That experience was to be for him the beginning of an intellectual quest which, he was to remark, haunted him for years.¹⁹ For it was one thing to form the opinion that species were mutable. It was quite another to be able to explain their variation. The search for an explanation was slow. But as it unfolded, directed by his wonder, he

spontaneously recognised the significance for the quest of the work of Malthus on populations.

Albert Einstein in his autobiographical fragments also recounts two early instances of the awakening of his wonder. At the age of 4 or 5 his father showed him a compass. Its behaviour baffled him.

'I can still remember - or at least believe I can remember - that this experience made a deep and lasting impression upon me. Something deeply hidden had to be behind things. What man sees before him from infancy causes no reactions of this kind; he is not surprised over the falling of bodies, concerning wind and rain, not concerning the moon or about the fact that the moon does not fall down, not concerning the differences between living and non-living matter.'⁽²⁰⁾

At the age of twelve a book on Euclidean geometry awakened his wonder again. In later sections of his 'Autobiographical Notes' we can see his wonder focusing, firstly on the problems involved in special relativity theory, and later general relativity theory. He has remarked that he discovered his theory of special relativity by asking questions about space and time that only children ask.²¹ That the unfolding of the quest that is wonder takes time is abundantly clear from Einstein's life. Speaking about the experiences which led up to the formulation of special relativity theory he remarked:

How, then, could such a universal principle be found? After ten years of reflection such a principle resulted from a paradox upon which I had already hit at the age of sixteen: ... One sees that in this paradox the germ of the special relativity theory is already contained.'⁽²²⁾

Behind the special relativity theory was a quest of some ten years. The same holds true for general relativity theory. As early as 1908 Einstein acknowledged that the special theory of relativity could not be a satisfactory basis for a theory of gravitation. A first assault on the problem was offered in 1911. He began to revise that position in 1912. A later paper was published in 1916, and tested experimentally in 1919. In November 1915 he remarked that he was so engrossed in the final stages of the resolution of the problem that 'letter writing was out of the question.'²³

A study of the autobiographies of Buber, Darwin, and Einstein fairly clearly establishes the case that wonder as quest takes time, and is a directing principle of the growth of the conscious and intentional living of the individual. In those lives can be identified early awakenings of wonder. The significance of those early formative experiences might not be grasped at the time. Any initial awakening of wonder is extremely unfocused, embryonic. At such an early stage one is quite in the dark about the direction of the growth. There has to follow a period of apprenticeship to the problem. There has to be mastered, not an understanding of human meetings or the origins of the species or the theory of gravitation, but rather the elements of the various problems.

Buber was forty five when he published I and Thou. Darwin published The Origin

of the Species in 1859, some twenty three years after the awakening of his interest. Einstein was thirty six when he began to master the problem of gravity in a new way. In the intervening years there could have been times when progress was slow or when other interests dominated. None the less, with some assurance the assertion can be made that if one wants to understand the life story of Buber, Darwin, or Einstein, then one will not do so without recognising the central significance of the emergence of their wonder. The direction it introduces might not be evident on any day or week or month. But over time it can, like Lewis's elusive joy, be discerned.²⁴ To neglect this dimension of their lives would be to do violence to their stories. I and Thou, The Origin of the Species, 'The Foundations of the General Relativity Theory', are for them the termini of quests that have been present and directing their lives, recurrently, over long time spans.

The wonder of Buber, Darwin and Einstein was directed, not towards normal scientific or life problems or puzzles, but rather towards fundamental problems. The story of the discovery of the Double Helix provides a more normal image of wonder at work in a somewhat shorter time span of a human life.²⁵ Watson remarked: 'My interest in DNA has grown out of a desire, first picked up while a senior in college, to learn what a gene was.'²⁶ That initial interest had to wait for some time before an opportunity arose to pursue it seriously. In his time at Cambridge we can see him slowly overcoming his ignorance about the elements of the problem itself. He had to be persuaded about the relevance of chemistry for the solution. There followed a slow mastery of the question. He learns that DNA crystallises, possibly forms helices, which in turn raises the further sub-questions, how many helices? As soon as the helical structure is established the problem of the bases and the manner in which they fit into the helical backbones emerges. The suggestion again will be that it would be nonsense to attempt to understand that particular time span in the lives of Crick and Watson other than in terms of the emergence of a wonder about DNA that introduces into the many dimensional lives they lead a direction. That direction reaches its goal in the communication to Nature concerning the helical structure of DNA.

Wonder occurs over time. A problem is not solved instantly. It has a story. The proper context for its study is time spans or ultimately the unity of conscious and intentional living that makes up the life time of the human person. When it emerges and recurs, as in repeated awakenings in grappling with a significant problem in life, it directs over time human mental processes as a whole.²⁷ It is a directive principle of the growth of conscious and intentional living, and accordingly, of the human person. In accordance with the human situation or scientific datum which it selects out in the world, it directs our perceptions, imagination, memory, reading, the people we talk to and associate with, and so forth. The understanding of wonder as a directive principle of consciousness is one of the keys to understanding it as a narrative. That it is a directive principle might not be obvious while one is engaged in problem solving, particularly in the early and confused stages, but only in retrospect when one remembers the course of the inquiry as a conscious experience. For it is one thing for wonder to be a real directive principle of consciousness in life as it is lived. It is quite another for it to be known as such. In order to make that discovery the conscious dimension of problem solving must become an object of questioning interest itself.

That directing is in a sense not continuous. It is interrupted, again and again, by sleeping and waking, by all the distractions of the daily grind of life. However, once wonder is awakened to an object of interest in the world, it introduces a direction into the many forms of patterns human consciousness can take, into sleeping and dreaming, living dramatically and intersubjectively in the presence of others, all as experienced in a day, month, or a year. Interruption then does not invalidate the claim that wonder directs the conscious and intentional living of the person. The boat on its journey from one place to another can make many detours before it finally arrives.

Again, at any time in a life a person's wonder may have many interests and accordingly ground more than a single direction in their living. On some occasions such interests might be mutually exclusive so that a person might have to choose one direction or road rather than another.²⁸

III

A narrative is not characterised merely by a time span or a direction. Within the time interval in which it unfolds it is constituted by a complex tense structure, a complex interaction between the past, the present, and the future. Accordingly, if wonder has a narrative structure it must be shown that as a conscious and intentional operation it is characterised by that same complex tense structure.

Crites remarks that for Augustine consciousness 'anticipates and attends and remembers, so that what it anticipates passes through what it attends into what it remembers.'²⁹ He draws a distinction between chronicle memory and recollection, a distinction which seems close to Aristotle.³⁰ Then talking about the presence in the present of things past and future he remarks:

'I want to suggest that the inner form of any possible experience is determined by the union of these three distinct modalities in every moment of experience. I want further to suggest that the tensed unity of these modalities requires narrative forms both for its expression (mundane stories) and for its own sense of the meaning of its internal coherence (sacred stories). For this tensed unity has already an incipient narrative form.' (31)

Consciousness, for Crites, is such that it can all the time unite a past, a present, and a future. It is precisely this tense structure which for him constitutes it, cumulatively over time, as a narrative rather than a chronicle. Not every activity or state that is conscious necessarily has that tense structure. The present task will be to establish that wonder has precisely that tense structure which Crites attributes to the more general category, consciousness. Cognitive or practical wonder, when it is operative, is one possible conscious and intentional operation which has the natural given capacity to remember a past, operate in the present, and anticipate a future. Whether there are other conscious operations with similar capabilities is left as an open question.

Wonder can awaken and emerge recurrently in the human life time. As it is a

process it does not occur like an insight, all at once. Rather it is operative on any occasion over a time interval. During that time interval when it has emerged and is operative, it is constitutive of the present, the 'now' of the individual. He or she is wondering 'now'. At the genesis of a problem the object which arouses wonder, the strange movement of the compass for Einstein or the absence of the mother for Buber could coincide, temporally, with the operation of the wonder. If there is involved the resumption of some previously engaged problem, than as wonder operates in the 'now' of the individual there is an inherent backward reference to the object in memory and to past progress in the understanding of the object. The problem one is interested in 'now' arose 'then' in conjunction with such and such past experiences. As it developed some further relevant experiences, clues, insights, etc., emerged which wonder can now remember. But in the present, the quest is incomplete. There is a demand for additional present creativity.

The incompleteness of one's present wonder draws our attention to the fact that it is also an anticipation. In well defined problem solving situations, such anticipations can be highly articulated in terms of heuristic structures.³² Prior to finding the unknown x in algebra one knows that it is the solution of some equation which one strives to formulate. Once formulated the resolution will be simply routine; the anticipations are crystal clear. In problem solving the elements of experience and anticipation are perhaps most intense. There is an experience of an incomplete striving. That striving involves an anticipation. The quester can hardly wait for his or her anticipations to become fulfilled. Fulfilment is in the future.

The really great problem solvers seem to be those who can most creatively integrate the memory and the anticipatory element of wonder. An outstanding example here would be Niels Bohr.³³ Years of his life were a quest to understand the structure of the hydrogen atom and the explanation of the periodic table. He inherited an enormous and confusing accumulation of chemical understanding from the recent past, Thomson's discovery of the electron, the work of Plank on quanta, Rutherford on nuclear structure, the Balmer Series, and so forth. Some of the inherited understanding was relevant to his problem, some was irrelevant. It is said of him that:

'With unerring instinct Bohr seized upon whatever was right in the ideas of his predecessors, and rejected what was wrong, adjoining to them precisely what was needed in order to make them fruitful...'(34)

His explanation of the structure of the hydrogen atom incorporated the findings of those scientists in a novel and creative synthesis. Describing Beethoven's creativity Sullivan remarks:

'Numberless experiences extending over several years are gradually co-ordinated in the unconscious mind of the artist, and the total synthetic whole finds expression, it may be, on some particular occasion. ... A genius may be defined as a man who is exceptionally rich in recoverable contexts.¹³⁵

In the present problem solving of Bohr and the artistic creativity of Beethoven there is

an accumulation of those numberless experiences through which the best in the past tradition is assimilated. They, like all creative problem solvers, had that characteristic of mind of searching and recovering from past experience precisely those elements and clues which were relevant to their present efforts to advance, creatively, the problem. The extent of the need to recover past achievements seems in direct proportion to the magnitude of the problem. The greater the problem, the greater the need for the recovery of all relevant past achievements. In this sense the future is in the past.

There would appear then to be no relevant intellectual achievement in the past to which wonder cannot now appeal in its present efforts to further the quest. In searching for clues wonder can direct memory to link past cultural and personal achievements with present striving. In so doing it does not have to work back through time, chronologically, but can move now from one past achievement to another even though they are separated by vast time intervals. It can in principle immediately link one's now with any past achievement or experience without necessarily referring to intermediate times, experiences and achievements.

Despite its past reference the resolution of a quest such as Bohr's is not in the past. Until it is attained through a further creative discovery it is a future anticipation in one's present. Wonder refers to a past, operates in one's now, and anticipates a solution in the future. As so operative it is a principle of accumulation and of integration. It generates an accumulation of knowledge because basic problems such as 'what constitutes a human meeting?' or 'what is the explanation of the development of organic species?' are, in Collingwood's terms, complexes of questions and answers.³⁶

Watson was interested in a single problem, the explanation of the gene. In resolving it he has to resolve a nest of sub-questions concerned with molecular crystals, helices, and bases. The sub-questions and their answers are not explicitly articulated in the initial embryonic interest. What they are is not known in advance. They have to emerge, be discovered. The self-correcting process of learning has to be allowed to operate. Through it more recent significant sub-problems and discoveries are added to earlier ones in the unfolding of one and the same problem. Part of that addition could be the recovery of past achievements. That addition does not happen in a nice systematic or casual manner. Insights or discoveries emerge largely by chance.

The same seems to be true of significant recoveries, the recovery of the significant work of Mendel being a case in point. There is an unavoidable random or synchronous element involved in their emergence, a point well illustrated by the coincidental presence of Donohue in the office of Watson towards the final stages of the quest for the structure of DNA.³⁷ Their emergence cannot be predicted like a term in a mathematical series. Because of this the unfolding of a problem in a person's life does not follow a systematic or causal temporal sequence. It can stop and start, be re-entered again and again. There will be times when the sub-questions and the insights flow. There will be periods when they dry up, periods of simply waiting for inspiration. Not alone that, but the development of the quest is all the time in a dialectical conflict with a desire to remain closed, in the dark. The human person is a mixture of a flight from and towards enlightenment.

Wonder is also a principle of integration. For some insights in their emergence do not simply add another element to the present jig-saw puzzle. Rather they can integrate and unify a movement that was building up in a person's life for years and years. The final insights of Bohr into the hydrogen atom, or the explanation of the periodic table of the chemical elements, are of this kind. Instead of adding further details, they integrate and unify movements that were building up for years in his own life and for centuries in the history of chemistry. Before the emergence of such integrating insights, the whole problem is a vast confusion of pieces. As the confusion grows so too does the demand for integration. After they have emerged all the elements of the problem are understood in their interrelation.

In a similar vein Leon Edel, talking about biography, recognises 'the fact that on a given day we relive whole parts of our past.'³⁸ In intellectual terms, on a particular occasion wonder in its quest integrates and unifies movements that have been developing throughout long periods, both in cultural history and in our own lives. This is seen in miniature in the closing stages of The Double Helix. But musicians such as Beethoven, writers such as Joyce, scientists such as Bohr can, at a particular moment in their lives, integrate and unify, not simply movements within their own musical or literary or scientific histories, but historical movements that might have been germinating for centuries. This, according to Edel, is Virginia Woolf's point in Orlando³⁹

When consciously operative in a life, wonder is constitutive of the now of the individual. In accordance with its nature it organises, natively, images and memories, even pervades day and night dreams in its search, accumulates insights and their expression in propositions, and finally becomes critical, concerned with what is and is not the case. As so operative it is fundamentally an anticipation of a future fulfilment. But as the future is to some extent in the past, in the pursuit of its fulfilment it reaches backwards all the time into past memories and achievements. In its backward reference it is not tied to the immediately previous experiences in chronological time but can refer, immediately, to past experiences without references to intermediate ones. Through its progress, through the recovery of significant achievements of the past and the addition of present creativity, it is continually changing its perspective on the past and the future.

This ability to change, natively, its perspective on the past and future through such present progress is a core characteristic of the tense structure of both narrative and wonder. It is then the present contention that wonder, in its actual emergence and operation, through its tense structure and the manner in which it is a real principle of accumulation and integration, is in fact a primordial narrative. It is that primordial narrative which the intellectual autobiography seeks to understand and grasp. The written up autobiography is derivative of that more primordial narrative. Its incompleteness in no way casts doubts on the givenness of the primordial narrative, rather the contrary.

IV

Historical narratives are characterised by their specific plot, unique cast, and particular historicity. They are not about events and situations in abstract space and time. Rather their content is verifiable in real space, time, and history. They contain the names of concrete places and people, France and Napoleon; specific dates and historical contexts, 1812 and post Revolutionary Europe, for instance. Their historicity is emphasized by the fact that no two narratives are the same. They are constituted by their historical uniqueness, dates and places, particular characters, and the plot that is acted out in them. If wonder as an inquiry or quest has a narrative structure, then its unfolding must be historical. It must not be some kind of inner, private, and unverifiable fantasy about abstract space and time. It must take in history and be historical. Because wonder as a quest or inquiry is historical, every individual will in his or her life write their own unique intellectual autobiography. Like fingerprints, no two intellectual autobiographies will ever be exactly the same.

It could be argued that what it is that wonder is trying to find out about the given constitutes the plot. The given, which defines the plot is public, not apart from space, time and history. The strange behaviour of the members of one's family, of one's friends or business associates, the data of the first three minutes, the fossil record, the history of civilizations and cultures, the chemical DNA, are not private objects in one's mind, but rather public, in principle accessible to every other mind.⁴⁰ To stress that wonder is a relational mental activity between a human agent and a public object is to emphasize that it is not some inner private mental activity. It follows that the narrative that is constituted by the unfolding of wonder in time is not some inner and private fantasy. At every stage it is characterised by relations in which one term, being an object in the public world, is external to the agent. As the narrative continues, the subject moves more and more out of himself and into the real world. That process is both historical and in history.

As well as the public plot there is also the historicity and cast of the quest, for no one quests alone, in total isolation from all others. Nor does each individual questioner begin anew. In very many scientific problems the ground has been prepared by decades and even centuries of earlier striving. In Chapter Four of Rosalind Franklin and DNA Ann Sayre points out how the problem of understanding the gene had been developing at least since the time of Mendel's breakthrough in 1865, and possibly earlier.⁴¹ The twenty years before Crick and Watson arrived on the scene were taken up with the elimination of a major blind alley in the problem, namely the notion that the key to genetics lay in proteins rather than in nucleic acids.⁴²

This again illustrates the historicity of wonder. They arrived on the scene at a particular and unique historical moment. Historically the stage had been set for them. In the story we can identify the public object of wonder which defines the plot of the quest, the chemical structure of DNA; the collaborators, Crick, Watson, Donohue; the competitors, Pauling, Wilkins, and Franklin. So it was with Bohr on a much grander scale. Historically the stage had been set for him by an historical movement that started with Newton, worked through Lavoisier, Dalton, Mendeleev, Balmer, Rutherford, and others.⁴³

The historical nature of human wonder can be identified in its operation in the world of family and dramatic living, as well as in the world of scientific collaboration. That everyday world is explored symbolically by dramatists in works such as Ibsen's A Doll's House and Miller's Death of a Salesman. The situations thrown up in dramatic living can awaken our wonder. For years Biff Loman found his relation with his father an immense puzzle until eventually he made the discovery that he was not the god his father expected him to be, but just an ordinary guy: 'Pop I'm a dime a dozen, and so are you!'⁴⁴ In A Doll's House Helmer's response to a discovery about his wife leads her to conclude that he never really loved her but only found it pleasant to be in love with her. The experience awakens her wonder to the question, 'what are my most sacred duties?'⁴⁵

Personal experiences and encounters, no less than the data of the first three minutes, the fossil record, or the chemical DNA provoke wonder. They demand that we make the effort to understand what it is that is happening. For the main actors in both dramas the plot has been prepared, not totally by themselves, but also by the historical context and overall cast in their lives. The precise issues to be wondered about and understood in current family living can have their origins and preparation in earlier generations of parents and children. The relation between Willy Loman and his own father and the transition from being an immigrant to an established generation shape the stage. The relations between Nora and her husband were prepared by the way in which society previously educated men and women in the marriage roles and expectations. The historical cast determined the plot of the quest. In it there are collaborators and villains. There are the wisdom figures, as Progoff would call them, who mysteriously turn up in time with advice and counsel. There are discouragers who seem a permanent feature of the human stage in their pessimism, opposition, and hostility.⁴⁶ As it unfolds in response to life's questions in the dramatic world, human wonder introduces into living a principle of direction. In its unfolding it is historical. It has a narrative structure.

Generally, then, the individual and his wonder are born into a particular and unique historical and cultural setting which determines in certain ways the possible objects of wonder or plots. It also determines the cast that is going to prepare the stage for his wonder as well as assist or even possibly hinder it. History itself is thus in a basic sense the pre-cast. The unique circumstances into which the individual is born, the levels of scientific and cultural development and achievement, the social and political struggles, all of these bear on and perhaps shape the personal development of his wonder. We can be born into an age that values the quest for understanding as well as into an age in which educators are not much interested in the cultivation of wonder. There is the individual's own psychology. More basic in his narrative is the universal tension between the desire for light and the desire to remain ignorant and in the dark. Wonder is in need of redemption.

Wonder, it is the present contention, is inherently relational and historical. It is related to its object in the world of space, time, and history, a human situation or state of affairs, or a scientific or hermeneutical datum. It is also related to other mental

activities such as looking, imagining, remembering, understanding, and so forth, which it organises in the pursuit of its goal. It cannot operate independently of an object and of those other mental activities. Rather it unites and directs them in the problem solving performance. As such it is historical, both in its relation to its object and in its unfolding. Its objects exist historically. Its unfolding is not some abstraction, but a central feature of the personal history of the individual quester through which he or she enters into a deeper relationship with those objects. As historicity is a basic characteristic of human wonder, every individual writes in their lives their own unique intellectual stories. No two intellectual autobiographies are the same.

As well as the plot and the cast, the historicity so to speak, there is also the content of the narrative itself. Not all moments in the quest are of equal weight. Education by rote can continue for years and result in no real development of wonder. An unanticipated experience, the meeting of an inspired individual or the reading of a significant book can result in a profound awakening of the human spirit and a subsequent entry into a whole new horizon of intellectual interests. Such moments can be seen in retrospect as Steppingstones.⁴⁷ They can begin new chapters in our quest. As well as awakenings there are also moments of major revision brought about by challenging experiences or encounters. There are moments when we have to choose one road or problem rather than another, followed by moments of resolution which could end chapters in the narrative. The steppingstones and chapters of the narrative are not, to use a category of genetic epistemology, stage linked. But much work remains to be done to clarify the distinction, for instance, between chapters and stages.

These brief suggestions open up some avenues of exploration of the narrative structure of wonder. The historicity of wonder is illustrated by the historical nature of the plot and cast. Such historicity is not an accidental attribute of wonder. On the contrary it is at its heart. Every historical incarnation of wonder is a further instance in which its narrative structure can be verified.

V

The points considered so far ultimately lead to the question, what precisely is a narrative?⁴⁸ Like wonder, it is a term more used than understood. Obviously the task of adequately understanding the nature of narrative is beyond the scope of the present inquiry. Nor is it the concern to reach such an understanding but rather, simply to establish that wonder and narrative have the same kind of structure. In that context a central relevant question is that of the distinction between chronicle and narrative. Is narrative really distinct from chronicle? Is it simply a fictional construction out of a chronicle? Does it, rather than chronicle, make the real life known, or vice versa? Of the many possible questions about narrative these will be selected as relevant to the present exploration. Understanding a basic point about the claim that wonder has a narrative structure requires that the fundamental distinction between chronicle and narrative be clearly grasped.

Stephen Crites is familiar with the problem of the distinction between chronicle memory and narrative. All story telling for him presupposes a chronicle of memory,

'the original chronicle, the image stream is always at hand, needing only to be recalled.'⁴⁹ Telling a story is 'never simply the tedious and unilluminating recital of the chronicle of memory itself.'⁵⁰ Chronicle for him lacks the tense structure of narrative:

'In the chronicle of memory there is the simply temporality of succession, of before and after, but not yet the decisive distinction between past, present, and future, that provides the tension of experience and therefore demands the tenses of language.'
(51)

Conscious experience is for him such that 'now' one can remember the past, attend to the present, and anticipate the future. He asserts that 'the tensed unity of these modalities requires narrative forms both for its expression and for its own sense of meaning.'⁵² From a tense point of view narrative is obviously utterly distinct from chronicle.

Literary biographers such as Edel have faced the same problem.⁵³ Is the task of the literary biographer simply to arrange in chronological order all the main events in the life of their subject? Does that succeed in capturing the reality of the life? Ellmann's biography of Joyce would seem to be a chronicle. It is set out, with one or two exceptions, in strict chronological order. It devotes successive chapters to successive chronological time spans in the life. The chapter headings are in fact time spans in the life, 1914-1915 for instance. The chapters will obviously include in temporal succession all the most significant events which occurred in those years of the life. Yet within those chapters it is hard to pin down, chronologically, what is going forward in the life. For events in one chapter can be immediately related to events in a previous or even later chapter.

It was for this reason that Edel in his biography of Henry James decided to break with the strictly chronological approach to biography. Discussing the manner in which he narrated the account of James' relations with Emerson he remarks:

'I do this in violation of all chronology, dealing with my subject's relation to Emerson at the most meaningful moment that I can find - the moment when Henry James is taking measure of America and deciding whether he will remain in that country or yield to his cosmopolitanism. Instead of chronicling little episodes and encounters piecemeal, as mere anecdotes, I recreate two personalities in their relationship to one another and in particular the significance of the older man for the younger. By weaving backward and forward in time and even dipping into the future, which to us, as readers, is after all entirely of the past, I reckon with time, as it really exists, as something fluid and irregular and with memory as something alive and flickering and evanescent. I refuse to be fettered by the clock and calendar. I neither depart from my documents nor do I disparage them.'⁽⁵⁴⁾

In justifying his break with simply chronology Edel refers to Virginia Woolf's Orlando as a fable for biographers:

'Orlando's central and gentlest mockery is of time and of history: its insistent theme is

that human time does not accord with clock time and that our mechanical way of measuring the hours makes no allowances for the richness of life embodied in a given moment, which can hold within itself the experience of decades.' (55)

Edel contends that Woolf goes even further and maintains that a life cannot be comprehended within the narrow confines of its strict chronological lifetime at all but only in the context of times both before and after the lifetime:

'Does this not mean that the biography of any individual must be created out of the total past and not merely out of the mechanical calendar present of their lives?' (56)

On the basis of these observations it should be clear that narrative, whatever it is, is very different from chronicle. But the problem of the distinction between them is by no means trivial. If a narrative grasps the reality of a person's life then it is only to the extent that we understand what a narrative, rather than a chronicle is, that we will understand what a person is. Likewise if human consciousness or the human mind is essentially a narrative rather than a chronicle of atomic mental events, then it is only to the extent that we grasp what a narrative is that we will understand the nature of the human mind or of consciousness.

A chronicle is basically an ordered account of events in the life in accordance with the principle of strict chronological succession. A diary would be an elementary chronicle. It would record events such as meetings, journeys, works, and the places and times of their occurrence. In a life there will obviously be far too many events to recount so the 'biographer' is faced with the task of selecting the significant ones. The essence of the chronicle is that these are recounted day by day and year by year. The titles of chapter headings in the biographical chronicle could be years or time spans rather than life themes or relations. Non chronological connections are excluded. Some biographers claim that chronicle is the only true biography and that anything over and above a chronicle is simply a fiction, a construction of the human mind, a categorial imposition on the data with no objective validity or ontological status. About such biographies Edel has complained:

'Yet many biographies suffer from this defect: written chronologically they do not suggest the human element of time in a life, the fact that on a given day we relive whole parts of our past.' (57)

On a particular day in a life there can be integrated, not the experiences of the immediate past, but rather an aggregate of experiences from different and remote times in the past life. This confronts us with the question; does chronicle really grasp what it is to be truly human?

As we can wonder about when and in what do we understand a person's life, so also we can wonder about their mind. Is an understanding of the mind of a person reached in a mental chronicle or in a mental narrative? Is the task of understanding a person's mind firstly that of identifying the different kinds of mental activity, sensory, imaginative, memory, intelligence, reason, and so forth, and secondly of order them

chronologically? On this model of mind and mental acts, a mental chronicle of the atomic, sensory, imaginative, intelligent and rational activities. Such a philosophy of mind and of consciousness will have no place in it for the activity of wonder as it is currently being described, with its peculiar tense structure and its directional involvement in the life of the mind in the human life time.

But if the irreducible reality of human wonder is acknowledged then it will follow that an understanding of the human mind will be given, not in a chronicle, but rather in a narrative in which wonder is the central operation. Narrative would appear to stand in something of the same kind of relation to chronicle as wonder stands to the mental chronicle of various mental activities. The tense structure of narrative differentiates it from chronicle. The precise nature of the relation between chronicle and narrative is complex but it could be comparable to the relation between an image and an insight. The mental chronicle of the totality of perceptions, sensations, memories, images, insights, thoughts, judgements, etc., is a basic image in which the narrative structure of wonder can be understood. Such an understanding of the human mind as narrative seems quite distinctive from that normally sought by philosophers of mind, where the emphasis seems to be on the study of different faculties. The suggestion that the whole of the human life time is an unending intellectual quest with a story structure also has considerable implications for our understanding of the person and for education.

The central goal of the study has been to show that wonder has the same kind of structure as narrative. It has been established that it enjoys some of the central characteristics of a narrative. It is constituted by time spans and direction. It has a similar tense structure to narrative. It is characterised by its plot, cast, and historicity. Finally, it is not like a chronicle. These reflections, it is suggested, are adequate to establish that there is a link between the structure of wonder and of narrative. Being of the form of a preliminary exploration they make no claim to be exhaustive. Much further clarification remains to be done.

Notes and References

1. The Aristotelian Society, Supplementary Volume LIV 1980, 1 - 23.
2. Karl Jaspers, Way to Wisdom, Yale University Press 1960, 9f on children and the insane, Abraham Maslow, Towards a Psychology of Being, Van Nostrand Reinhold 1968, chapter 10, especially 139f on the creativity of the elderly.
3. See Buber, 'Autobiographical Fragments', in The Philosophy of Martin Buber, edited by P.A. Schilpp and Maurice Friedmann, Open Court Illinois 1967; Darwin, The Autobiography of Charles Darwin and Selected Letters, edited by Francis Darwin, Dover, New York 1958; Einstein, 'Autobiographical Notes', in Albert Einstein, Philosopher Scientist, edited by P.A. Schilpp, Open Court Illinois 1949.
4. De Anima, printed in The Basic Works of Aristotle, edited by R. McKeon, Random House, New York 1941, The central goal of that study seems to be that of identifying the complete set of different mental powers. This is perhaps brought out most clearly in the treatment of the imagination, 427b15 - 429a10, where it is argued that imagination is not a sense, and distinct from knowledge or intelligence or opinion.
5. The Critique of Pure Reason, translated by Norman K. Smith, Macmillan, London 1964, p112f (B105), p 126f, (A94, B 126-7).
6. Jean Piaget, The Principles of Genetic Epistemology, Routledge and Kegan Paul, London 1970; Dilthey, Selected Writings, Edited by H.P. Rickman, Cambridge University Press 1976, 177f, 207f, especially 212, 214.

7. Hume, A Treatise of Human Nature, Penguin Books , 1969, Book I, Part IV, Section VI, pps 299 - 311.
8. Quentin Lauer, A Reading of Hegel's Phenomenology of Spirit, Fordham University Press, New York 1982, Chapter 9, 'Absolute Knowing'.
9. P.S. Morris, Sartre's Concept of Person, University of Massachusetts Press, Amherst, 1976, Chapter 5. On pages 104 and 107 the distinction between Sartre's view and that of Hume is stated.
10. Stephen Crites, 'The Narrative Quality of Experience', Journal of the American Academy of Religion, 39(1971), p 291.
11. *ibid.* p 297. Where Crites uses the term consciousness, the present study will refer to wonder as both conscious and intentional. Wonder has a narrative structure, not simply as conscious, but rather as conscious and intentional. For the sense in which those terms are being used see Lonergan, Method in Theology, Darton, Longman and Todd, London 1971, index under 'intentional'.
12. *ibid.*, p 297, note 5.
13. Versions of the Self, Studies in English Autobiography from John Bunyan to John Stuart Mill, Basic Books, New York 1966, vii. Other related works are, John Dunne, A Search for God in Time and Memory, Sheldon Press, London 1975, Leon Edel, Literary Biography, Indiana University Press, Bloomington 1973, Ira Progoff, At a Journal Workshop, Dialogue House, New York 1975, John Shea, Stories of God, The Thomas More Press, Chicago Illinois 1978. Both Dunne and Morris are concerned with factors which have shaped the modern life story, Morris, *op. cit.*, p 7, Dunne, *op. cit.*, chapters 3, 4 and 5. As such they seem concerned with objectifying what Crites calls Sacred Stories although the matter needs clarification.
14. Morris, *op. cit.*, p 7.
15. see note 3 above.
16. Buber, 'Autobiographical Fragments', p 4.
17. *ibid.*, 4-5, 10, 24, 25-6.
18. The Autobiography of Charles Darwin and Selected Letters, 32f, 42, 174-5.
19. *ibid.* p 175.
20. 'Autobiographical Notes', p 9
21. Erik Erikson, Toys and Reasons, W.W. Norton, New York 1977, p 140.
22. 'Autobiographical Notes', p 53.
23. Jeremy Bernstein, Einstein, Fontana/Collins, 1973, p 63. On the story of the build up see 'Autobiographical Notes', 63f, especially 67f., where Einstein talks about an eight year long struggle.
24. C.S. Lewis, Surprised by Joy, Collins Fount Paperback, Glasgow 1978. Pps 16-20 make clear what he means by joy, the elusiveness of joy comes through on pps 23, 33-4, 134, 165. On p 190 he refers to joy as a principle of direction. The experience of wonder during long time spans in a life is not unlike Lewis' experience of joy, although it is more in our control. It does, however, require just as perceptive a memory as Lewis in order to appreciate it.
25. J.D. Watson, The Double Helix, Penguin 1970.
26. *ibid.* p 28.
27. On direction see Ira Progoff, The Symbolic and the Real, McGraw Hill Paperbacks, New York, 1973, Chapter 3.
28. Ira Progoff, At a Journal Workshop, Dialogue House New York 1975, 133f.
29. Crites, *op. cit.*, p 302.
30. On Memory and Reminiscence, printed in The Basic Works of Aristotle, edited by R. McKeon, Random House, New York 1941, 607-617.
31. Crites, *op. cit.*, p 302.
32. B. Lonergan, Insight, London 1957, Chapter II.
33. F. Hurd, The History of Quantum Theory, London Harrap 1974, 65f, also Mathews, Price and Ford, The Nature of Scientific Discovery, SISCON Report, Manchester University 1979, pps 131-153 on the synthesis of Bohr. The latter study makes the point that the collaboration of wonder through history that is the scientific community is also a narrative.
34. E.T. Whittaker, A History of Theories of the Aether and Electricity, New York, Harper Torchbooks 1960, Volume 2, p 107.
35. J.W.N. Sullivan, Beethoven, His Spiritual Development, Vintage Books, New York 1960, p 85. The parallels with Bohr are striking.

36. Collingwood, An Autobiography, Oxford University Press, 1970, p 32.
37. Watson, The Double Helix, p 163.
38. Literary Biography, p 145.
39. *ibid.*, 134f.
40. How such remote times can become an object of cosmological wonder is brilliantly illustrated by Stephen Weinberg in The First Three Minutes, Collins, Fontana 1978; how the fossil record can become an object of wonder is illustrated in Darwin's The Origin of Species, Collier Books, New York 1962, Chapter 10f.; how the history of civilizations can become an object of wonder is illustrated by Eric Voegelin's five volume, Order and History, published by Louisiana State University Press from 1956 on. These quests illustrate Hepburn's point about the extensiveness of objects of human wonder.
41. Ann Sayre, Rosalind Franklin and DNA, The Norton Library, New York 1974, chapter 4.
42. *ibid.*, 90-93.
43. see notes 33 and 34 above.
44. Miller, Death of a Salesman, Penguin 1976, p 105.
45. Ibsen, Plays, Penguin 1976, p 225f.
46. Progoff, At a Journal Workshop, 269f.
47. *ibid.*, Chapter 8.
48. See The Nature of Narrative, R. Scholes and R. Kellogg, Oxford University Press, London 1966. It should be clear that philosophers have contributed very little to the understanding of narrative.
49. Crites, 'The Narrative Quality of Experience', p 80.
50. *ibid.*, p 300.
51. *ibid.*, p 301.
52. *ibid.*, pps 301-2.
53. Leon Edel, Literary Biography, Indiana University Press, Bloomington and London, 1973.
54. Literary Biography, 149-50.
55. *ibid.*, 139-40.
56. *ibid.*, 140.
57. *ibid.*, 145.