

Keeping our Nerve: Scientific and Historical Paradigms in John Banville's *Doctor Copernicus*

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Drawing on Collingwood and Kuhn, the article shows how Banville's 1976 Doctor Copernicus delineates a scientific / historical "paradigm" by linking the "revolutions" of early modernity to the crisis of knowledge of the latter part of the 20th century, emphasising the need for historical awareness.

Key words: literature and history / historiography / historical novel / science / scientific paradigm / Copernican turn / Banville, John

UDK 82.0:930.85
82.0:001

In the chapter "The Historical Imagination" of his now classic *The Idea of History*,¹ R. G. Collingwood identifies historical thought as the dominant interest of modernity. History, he argues, has evolved since early modernity a technique no less structured and certain than that of her "elder sister," physical science, which dominated thought in the seventeenth century (Collingwood 232). But Collingwood rejects what he calls the "common-sense theory" of history, according to which the historian relies on documentary sources to record facts objectively as they have happened. By recognising that, for the historian, imagination in the (re)construction of historical events is "not ornamental but structural" and "a priori" (241), and that the historian himself – rather than (presumed) objective facts – is his own ultimate authority, "it is possible to effect what one might call a Copernican revolution in the theory of history" (236).

For us, steeled in the (post)structuralist and postmodern debates of the second half of the last century, the withdrawal of authoritative status from historical fact may not seem so bold a move. Even when Collingwood was writing, the objective status of external reality was being queried in various fields; we might think of the concern with the subjectivity of perception and the power of language to shape reality differently, or of the challenge

to the ideological premises of supposedly objective, factual genres that we find in writings as diverse as the fiction of Joyce and Woolf, the linguistics of Saussure and Sapir-Whorf, or the “new biography” of Strachey and other members of the Bloomsbury group. But in the 1930s the positivist model of historiography still dominated, and relocating authority from the objectivity of external facts to their narrative reconstruction by the historian was still a radical step, and one that can be seen as a pivotal moment in the twentieth-century’s evolving reflection on the nature of “referential” discourses.

Thus Collingwood’s description of this shift of perspective as the possibility of “a Copernican revolution in the theory of history” almost inevitably prompts reference to Thomas Kuhn’s equally groundbreaking model of the history of science. In the terms of Kuhn’s *The Structure of Scientific Revolutions*, what Collingwood effects through this radical reversal of our understanding of historiography and of the nature of historical truth would be defined as a “paradigm shift.”

The way “normal science” (scientific research firmly based on the foundations of past scientific achievements and of accepted theories) operates within the stable scientific paradigm (briefly: the sets of theories and beliefs that at any given time govern the way scientific knowledge is organised and new information is sought), may be compared to the “common-sense theory of history,” insofar as both these normalising modes of operating assume that the methods and principles governing research within their disciplines conform to the structure of reality and therefore best allow us to describe it. When “normal” scientific activity produces data that cannot be accommodated within the existing scientific theories, the paradigm starts to come under pressure and moments of crisis occur, leading to a sense of confusion, of loss of reference points and of certainties (the ramifications may be felt well beyond the group of specialists, as we see in the wider social effects of heliocentrism, or of Darwinian evolutionary theory). A battle then ensues within the scientific community over the conflicting theories, until a new paradigm is accepted, and this is what Kuhn calls a “paradigm shift.” Collingwood’s interrogation of the principles of historical writing similarly comes at a time when the predominant model is unable to answer satisfactorily the questions asked of it; his unhinging of narrative from proven objective truth can thus be seen to herald a new “paradigm” (I place it in quotation marks so as not to elide the differences that remain between Kuhn’s and Collingwood’s systems) that privileges the historian’s choice and focuses on the structures of linguistic and narrative accounts – what would later come to the foreground in postmodernist and New Historicist historiography.

In the 1960s and 1970s, in the context of the debate on “the Two Cultures” prompted by the Snow-Leavis controversy, but especially of the

impact of Foucault's writing on Western knowledge and of "the linguistic turn" of theory, Kuhn's work was seized on to blur the differences between discursive disciplines and those traditionally based on external evidence. But while Kuhn himself had pointed out a fundamental similarity of the two he was also careful to warn against a too hasty juxtaposition of the scientific and artistic models. In the 1969 "Postscript" to *The Structure of Scientific Revolutions* Kuhn suggests that he had taken the pattern of "scientific development as a succession of tradition-bound periods punctuated by non-cumulative breaks" from historians of "literature, of music, of the arts, of political development," for whom "[p]eriodization in terms of revolutionary breaks in style, taste, and institutional structure have been among [...] standard tools" (208), and in a later essay he points out that "the artist too, like the scientist, faces persistent technical problems which must be resolved in the pursuit of his craft" while "the scientist, like the artist, is guided by aesthetic considerations and governed by established modes of perception" ("Comment" 343). But he also insists that "[c]lose analysis must again be enabled to display the obvious: that science and art are very different enterprises or at least have become so during the last century and a half" ("Comment" 341), notably in respect of their relationship with aesthetics, with their public, and with their past achievements (I shall return to this last point later).² Collingwood was likewise careful to distinguish the sphere of historical research from that of fictional narrative despite their profound analogy: while the latter need only be bound by laws of internal artistic coherence, the historian will select, combine, and use his imagination in the narrative of events but must neither invent facts to prop his argument, nor suppress those that might undermine it.

If I return to these issues and bring together Collingwood and Kuhn, it is precisely because of the impact in the 1960s and 1970s of their call for a rethink the premises of their respective disciplines, and because it is such moments of historical, scientific, and cultural crisis and renovation, with their attendant sense of apprehension, confusion, and loss of stable values that are explored in John Banville's *Doctor Copernicus*.³ This postmodern novel, published in 1976, combines detailed historical reconstruction, cultural analysis, and the examination of (our construction of) the mechanisms of historical and scientific evolution in order to reflect, finally, on the present condition. By engaging the discourses of science, biography, fiction, historiography and economics it shows their interrelatedness in the "historical paradigm," and by placing the figure of Copernicus at the centre both of the scientific revolution (or "paradigm shift") and the broader historical and cultural upheavals of early modernity and of the sense of crisis of knowledge and values of the latter part of the 20th century, it

furthermore implicitly extends Kuhn's analysis of the history of science to a more encompassing, Foucauldian notion of epochal *episteme*. Much of this sense of displacement appears to depend on the mismatch between our perceptions of reality and the structures through which we know how to explain and understand reality itself, and it thus centres, at both ends of the historical spectrum, on the fracture between the desire to know reality as it is and our ability to represent it adequately. It is to this confluence of discourses in *Doctor Copernicus* that I therefore now turn.

The protagonist of *Doctor Copernicus* is a perfectly identifiable historical character, and the faithfulness to historical and biographical "fact" is very precise throughout the novel – indeed, almost be too precise to be believed:

people still come to me and say about *Copernicus*, "was that really his life? Did he do all those things?" I say to them "yes" and they look at me and don't believe it. So that when you actually do supply them with facts they don't believe it. If you reason it out, they're quite right. Because a novelist has no business taking actual historically recorded facts. (Sheehan 83)

The genre signposted from the start is that of the Joycean *Bildungsroman*, marked by the third person narration and the adoption of the character's perceptual, emotional, and intellectual point of view that gradually evolves from the child's to the young man's to the adult's. Unlike in *A Portrait of the Artist as a Young Man*, however, the voice is from the beginning that of a narrator that translates the perceptions of the child into a language rich with literary and philosophical echoes. The novel mimics then the style and conventions of biographical narration, moving on after that to a traditional omniscient and somewhat patronising narrator. There are then pages in epistolary form, and the second part is framed by allegorical, almost visionary, Gothic passages that re-echo throughout the novel. A completely different portrait of Copernicus appears in the third part through the (auto)biography of his disciple Rheticus, an utterly unreliable narrator who invents or distorts facts animated by resentment and spirit of revenge towards the astronomer. Copernicus also voices thoughts that the final notes ascribe to more recent figures such as Einstein, Planck, Kierkegaard, and in the fourth part any semblance of psychological realism is further disrupted by the imaginary, allegorical debate, also full of anachronistic references, between the old scientist, victim of a stroke, and his dead brother Andreas.

It is almost as if different points of view and voices, different narrative models, were tried out in the search for the most adequate biographical model that can present the character reliably and convincingly, and this

goes hand in hand with the character's own construction, or search for, a scientific model through which to express and reveal the truth of the cosmos and of the natural world.

In *The Copernican Revolution* (1957), cited by Banville as one of his sources, Thomas Kuhn presents Copernicus as a man suspended between the Middle Ages and the Renaissance, his *De Revolutionibus* – “a revolution-making, rather than a revolutionary text” – as “at once ancient and modern, conservative and radical” (134-35). In the novel, the use of the proper name becomes a pivot of this “suspension” between two worlds, two epochs, different artistic and scientific necessities, and focuses the ways in which the individual belongs to history and to different, shifting “historical paradigms.” The proper name should be the fixed, untranslatable mark of individual and family identity, and yet debating the derivation of the name Koppernigk from an uncertain, material origin seems to be the first and foremost necessity in biographies of the scientist – almost as if this were a way of tying him back to the earth he'd sent out spinning into the universe. Open to different interpretations, the name can be linked to different “things” depending on the eulogistic or spiteful intention of the speaker:

Burnished sheets of copper glowed [...] and happiness seemed a copper-coloured word. It was from this metal that the family had its name, his father said, and not from the Polish *coper*, meaning horseradish, as some were spiteful enough to suggest. Horseradish indeed! (8)

To complicate matters, Copernicus himself varied the spelling of his name depending on the context and the nature of the documents: Copernic in official administration, Coppersnic when the area was German speaking, Copernicus in official correspondence and in literary and scientific manuscripts. The signature could further vary into Koppernieck, Kopperlingk, Kupernik, etc. The form historically “approved” and used in most biographies, including the one by Arthur Koestler, which Banville has consulted extensively (244), and that written in the nineteenth century by Leopold Prowe and still considered the authoritative text, is Koppernigk (Koestler n. 1 569). What matters, however, is not what the various forms were but what Banville makes of this etymological and graphic uncertainty. It is when reference is made to the origins of the name that the narrative technique shifts from that of the Joycean *Bildungsroman* to the traditional biographical narration, with the account of the family origins:

The Koppernigks had originated in Upper Silesia, from whence in 1396 one Niklas Koppernigk, a stonemason by trade, had moved to Cracow and taken Polish citi-

zenship. His son, Johannes, was the founder of the merchant house that in the late 1450s young Nicolas's father was to transfer to Torun in Royal Prussia. (8)

The name gives the character his place in history and fixes his social identity, also identifying the family as one which had a good nose for business: the move to Krakow occurs when the city becomes the royal seat and builders and stonemasons are in great demand; the family then transfer to Torun when the relatively peaceful and prosperous 15th century turned the Vistula into one of the main commercial routes of Eastern Europe. To free himself from this net of pre-fixed identity, Nicolas must perform a symbolic act of defiance and of rupture that will enable him to assert his individuality and make a new, independent name for himself, a name that would signify his true, essential, autonomous identity and which can become his own personal seal on the new world view coined by his revolutionary scientific theory:

They might try, but they would not take everything from him, no. If the sentry were to accost him now he would announce himself fiercely, would bellow his name and impress it like a seal upon the waxen darkness for all Heilsberg to hear:
Doctor Copernicus! (109)

This self-made name, sanctioned by history ever since as "Copernicus," supplants in history the – until then – historically sanctioned family name "Koppernigk." It is here then that the rupture is located: in the intentional and individual choice, by the subject, of the subject's own manner of belonging in/to history. It is thanks to this new name that the character Doctor Copernicus can engrave, impress (Greek *kharássein*) his own uniqueness upon history, like a seal on wax (a wax remindful perhaps of the second Cartesian meditation on the proofs of the existence of the subject (Descartes 89-95)), like a sort of copyright mark upon the new structure of modern thought. This historical-genealogical fracture coincides with the scientific and philosophical fracture of traditional cosmology, while the shift from an identity centred in one's place in the pre-determined social structure to one centred on individuality – the act of self-creation – coincides with the moving of the centre of the cosmos from the earth to the sun.

Having drawn my neat parallels, I must also point out that Copernicus' rebel cry to assert his name and impress it like a seal upon the waxen darkness of the night in fact goes totally unnoticed by the sentry guarding the gate of the town: "But the sentry was asleep" (109), and he never even utters his rebellious cry. To pursue this ironic counterpoint further and modulate my own emphasis on the centrality of "character" in the novel,

another statement by Banville may be noted: “I have no interest in characterisation. Prior to *Copernicus*, in which I had the characters made for me, I consciously chose absolute stereotypes” (Sheehan 83).

Kharaktér describes both the tool that allows a mark, a seal, a stamp to be impressed, for example on coins so as to give them their value, and the imprint itself that fixes the value of the coin. Thus it is appropriate that Banville should choose “stereotyped” characters (characters whose meaning and value is pre-fixed – like historical ones, on whom the author’s imagination and invention can only exercise limited intervention), and it acquires even greater significance that Copernicus should choose his own value, his own character. Above all, it is significant that the issue of character construction, which in a way is the central issue of biographical writing, should be thus connected with the question of value, of money, of coins: for in the novel there is a subtext, an undercurrent that plays against the scientific and the imaginary – what should be concerned with the priceless, the absolute – and concerns instead the question of money, of the economy of meanings, of the value of science. In 1522, by request of the Prussian Diet, Copernicus wrote a treatise to implement a reform of the monetary system that fixed the quantity of metals to be used in coins, introduced state monopoly on the issuing of money, regulated the amount of currency that may circulate at any given moment (Koestler 145; n. 28 571). Thus Copernicus also takes his place within the nascent modern economic structure, and this links it with the new cosmology. Of course, this early capitalist development is only envisaged: the dominant system remains the hierarchical, feudal system based on land control through ecclesiastical tithes, and indeed it is one of Copernicus’ tasks, during the war between Poland and the Teutonic Knights of Prussia, to ensure that the land is cultivated and farms are not abandoned. The conditions of the peasants, whose status is that of serfs “tied” to the land, but who nevertheless seek to escape to the safety of towns when the war is fought on their lands and on their bodies, is often referred to in the novel. The link between money and cosmology in the (self-)construction of Copernicus’ *character* prompts us to read the contrast between the two opposite views of the cosmos and of man (medieval and modern; pre- and post-Copernican revolution) also in terms of the changing economic structure that evolves from the tie with the earth and the “fixity” of the “natural” value of things towards a target of free movement, variability and productivity that becomes autonomous from nature and is controlled by man through conventional and arbitrary laws increasingly detached from the rhythm of the apparent but regular and natural movement of the sun.

This also extends to the verbal and scientific *accounts* that, by their very nature of vehicles of communicative exchange, become substitutes for their referent. It is Nicolas' father, the Torun merchant, who explains to him "the meaning of money" (6), linking it to the value of words and of representations:

Coins, you see, are only for poor people, simple people, and for little boys. They are only a kind of picture of the real thing, but the real thing itself you cannot see, nor put in your pocket, and it does not jingle. When I do business with other merchants I have no need of these silly bits of metal, and my purse may be full or empty, it makes no difference. I give my word, and that is sufficient, because my word is money. Do you see? (6)

Nicolas "did not see" (6), but the parallel has been established between monetary and verbal systems of substitution, and he will later extend it to the scientific system of representation, when as an astronomer he seeks to explain the universe through an abstract model that he would like to be true ("He had believed it possible to say the truth"), but whose inevitable and frustrating conventionality, fictionality, and yet necessity he has to recognise ("now he saw that all that could be said was the saying. His book was not about the world, but about itself," 116).

The poet knows that in order to see clearly things in their essence one would need to "become an ignorant man again" and elude any kind of formalisation or interposition of cultural, historical, social filters. The epigraph of the novel is taken from Wallace Stevens' *Notes Toward a Supreme Fiction*:

You must become an ignorant man again
And see the sun again with an ignorant eye
And see it clearly in the idea of it.

The child too, like the poet, can have access to the vision thanks to his *infantile* (non verbal, or pre-verbal) perceptions. At the beginning of the novel little Nicolas – as yet unnamed – feels one with the linden tree, also as yet unnamed and unidentified: "At first it had no name. It was the thing itself, the vivid thing. It was his friend. On windy days it danced, demented, waving wild arms" (3). Nicolas' infantile perception of the tree is intuitive, of direct access to the object and of union with it. It is only when the tree is given a name that Nicolas (whose name we also learn now for the first time) learns to distinguish it, and thus to distinguish himself from it, and to recognise the relationship between words and the world of things:

Look, Nicolas, look! See the big tree!

Tree. That was its name. And also: the linden. They were nice words. He had known them a long time before he knew what they meant. They did not mean themselves, they were nothing in themselves, they meant the dancing singing thing outside. (3)

“The artist like the infant, must learn to speak in order to assimilate the world” says Banville in a talk given in 1981, 5 years after the publication of the novel (“A Talk” 15). The essential truth, “the thing itself” (a phrase frequently repeated in the novel, with an – often ironic – echo of the Kantian *Ding an sich*) can only be intuited with a creative / poetic act of the mind, suggesting the alliance of poetry and philosophy, as in Goethe’s *Dichtung und Wahrheit* or Heidegger’s *Dichten und Denken*. The paradox of course is that language will “mediate,” interpose itself between self and world, word and thing – and often it won’t even be able to mediate: “The universe of dancing planets was out there, and he was here, and between the two spheres mere words and figures on paper could not mediate” (*Doctor Copernicus* 93). It is the problem that besets the scientist through his life: on the one hand the desire to capture the truth of the world, even the possibility of intuiting it in the instant of vision; on the other, the inevitable reduction of it to an arbitrary, conventional model, and the apprehension that a model may be superseded by a new one: the necessity, in order to see each time anew, to become each time a blind, ignorant man again.

It is only on his deathbed that Copernicus will find again just for a moment the lost unity with “things” and with the linden tree of his childhood, re-uniting again his sundered self, finally hearing in the everyday noises of life that “music of the spheres” to which his ears had yearned all his life. Coins jingle, the thing itself doesn’t, his father had taught him. Coins are only for little boys, the grown up scientist yearns for the real thing, yet he wants to hear its music. It is only when he is again like a “little boy,” an infant in his senility, hallucinating, “demented” as a consequence of a stroke, that he can hear the music, the jingle of the real thing, and this music is not that of the cold, silent spheres, but the voices of the common people, of their everyday lives. The historical circle of biography, the orbit of a life is closed, the circulation / revolution of meanings, names, of the values of words and things is completed – and they do jingle, toll, and call him away to them:

and Nicolas, straining to catch that melody, heard the voices of evening rising to meet him from without: the herdsman’s call, the cries of children at play, the rumbling of the carts returning from market; and there were other voices too, of churchbells gravely tolling the hour, of dogs that barked afar, of the sea, of the

earth itself, turning in its course, and of the wind, out of huge blue air, sighing in the leaves of the linden. All called and called to him, and called, calling him away. (242)

The tension between the desire for a scientific “truth” that is more than just a “model” and our attempts at description – that can only be models – already emerge during Nicolas’ student days, when he thinks he can discern the trace of a doubt in the writings of his professor of astronomy, and this makes tangible for him the crisis of a system and the slow but inevitable advent of a new one:

Nicolas had read everything the Professor had ever written on the Ptolemaic theory. Out of all those weary hours of wading through the dry sands of a sealed mind there had been distilled one tiny precious drop of a pearly doubt. He could no longer remember where or when he had found the flaw, along what starry trajectory, on which rung of those steadily ascending ladders of tabular calculation, but once detected it had brought the entire edifice of a life’s work crashing down with slow dreamlike inevitability. *Professor Brudzewski knew that Ptolemy was gravely wrong.* He could not of course admit it, even to himself; his investment was too great for that. This failure of nerve explained to Nicolas how it was that a mathematician of the first rank could stoop into deceit in order, in Aristotle’s words, *to save the phenomena*, that is, to devise a theory grounded firmly in the old reactionary dogmas that yet would account for the observed motions of the planets. (29)

Of course, the Professor denies that such heresy can be gleaned in his writing:

You are asking our science to perform tasks which it is incapable of performing. Astronomy does not describe the universe as it is, but only as we observe it. That theory is correct, therefore, which accounts for our observations. (35)

Brudzewski is with these words almost signals an awareness that is more modern, more “Kuhnian,” than that of Copernicus, who wants to get to the “vivid truth” of the cosmos. He does so, he thinks, in a clear, pure instant of vision. *Theoría* etymologically translates as “spectacle,” “contemplation” (from *theorein*, “to see” or “look” in the abstract sense, in turn derived from the root *theāsthai*, from which also comes “theatre” as “place where one sees, or looks” (Klein *s.v.* “theory”). Copernicus’ theory, in short, is his intuitive vision: he is the spectator of a mental representation of the cosmos that he mistakes for its reality. But the linguistic translation of the vision, “instead of approaching the word, the crucial Word,” can only fade into “loquacious silence” (116). The theory, so simple in its purity, but then also so illusory, is both original creation and radical rup-

ture with tradition and the dominant culture of the time. At war here are not only two different scientific paradigms, but also two conceptions of truth. The change of paradigm is Kuhnian, the language visionary:

Nothing less than a new and radical instauration would do, if astronomy was to mean more than itself. /.../ The closed system of the science must be broken /.../ the birth of the new science must be preceded by a radical act of creation. /.../ Calmly then it came, the solution, like a magnificent great slow golden bird alighting in his head with a thrumming of vast wings. It was so simple, so ravishingly simple, that at first he did not recognise it for what it was. /.../ What mattered was not the propositions, but the combining of them: *the act of creation*. He turned the solution this way and that, admiring it, as it were turning in his fingers a flawless ravishing jewel. It was the thing itself, the vivid thing. (83-85)

Copernicus too has a moment of doubt, and experiences a sense of loss, fear, and confusion similar to that described by Kuhn at the end of a paradigm:

No sooner had he realised the absolute necessity for a creative leap than his instincts without his knowing had thrown up their defences against such a scandalous notion, thrusting him back into the closed system of worn-out orthodoxies. (85)

The astronomer sees in his revolutionary discovery, compounded with his own doubts about his theory, the risk of death: the death of faith, of man's trust in his own strength and in his centrality, in the structures that have sustained society for centuries:

He would be dragged out, kicking and howling, into the market place /.../ he began to wonder if he would be well advised to destroy his work. /.../ They would seize upon his work, or a mangled version of it more like, with awful fervour, beside themselves in their eagerness to believe that what he was offering them was an explanation of the world and their lives in it. And when sooner or later it dawned upon them that they had been betrayed yet again, that here was no simple comprehensive picture of reality, no new instauration, then they would turn on him. /.../ They must be made to understand that by banishing Earth and man along with it from the centre of the universe, he was passing no judgements, expounding no philosophy, but merely stating what is the case. (119-20)

(Ironically, there is no such outrage, not yet: paradigms shift slowly). This is just what had happened to Brudzewski, whose nerve failed him, who accepted to sink back into that orthodoxy to which Copernicus will also yield, afraid to publish his revolutionary book.

The need for the “radical act of creation” is permitted by – it originates in – an acute sense of alienation and alterity: from the world, of the world, with the world. This sense of alterity enables both the scientific vision and the poetic act of creation; Banville quotes Wallace Stevens again:

From this the poem springs: that we live in a place
That is not our own, and, much more, not ourselves. (Banville, *A Talk* 15)

For the Irish author this inevitably extends to the social, political, cultural context, and cannot but recall Stephen Dedalus’ words in *A Portrait of the Artist as a Young Man*, where Stephen, the Artist, also attributes a generative function to this sense of alterity. While talking to the Dean of Studies, an Englishman, he thinks:

His language, so familiar and so foreign, will always be for me an acquired speech. I have not made or accepted its words. My voice holds them at bay. My soul frets in the shadow of his language. (189)

It is precisely because of this fretting of his soul that Stephen will become an artist, but this also raises, in our context, much more specific and specifically historical questions of national identity. What may be displaced onto the historical position and appropriations of Copernicus – is he German, Prussian, Polish, Ermlander? – is the question, particularly bitter in the 1970s, of Northern Ireland and of Irishness, of independence, of independent thought and its relationship with national and individual identity; and, echoing Joyce, of the way nationalism can become one of those “nets” that the individual has to “fly by” (Joyce, *Portrait* 203) to achieve his autonomy:

Pressures from all sides were brought to bear on him. His brother-in-law Bartholomew Gertner, that fervent patriot, stopped speaking to him after the Canon one day during his stay at Torun had refused to declare himself, by inclination if not strictly by birth, a true German. Suddenly he was being called upon to question his very nationality! and he discovered that he did not know what it was. Bishop Lucas, however, resolved that difficulty straightaway. “You are not German, nephew, no, nor are you a Pole, nor even a Prussian. You are an Ermlander, simple. Remember it.”

And so, meekly, he became what he was told to be. But it was only one more mask. Behind it he was that which no name nor nation could claim. He was Doctor Copernicus. (94)

Just like his individual identity as a scientist displaces his social one, science becomes a way out of the “nightmare of history” (Joyce, *Ulysses* 34).

But history and science cannot be unhinged: for the Nazis Copernicus could not be a Pole because he was a genius, for the Poles he is a national hero. History re-appropriates the scientist, turns him again into a battlefield of nationalities and racial, national and cultural superiority.

Thus, to sum up, *Dr Copernicus* draws from and unsettles a wide range of genres. It reconstructs clearly identified historical events (wars in Central Europe in the late fifteenth-early sixteenth centuries, intrigue in Renaissance Italy, changes from a feudal to an early modern world, Columbus' travels, the discoveries of the era), and it can therefore be called a historical novel (given its mixing of accurate historical references and allegorical passages we may ask, of the romance or the realist type?). Or would be more appropriate to call it a biographical fiction? In fact, the genres of biographical writing also multiply, and, as we have seen, we have autobiographical parts, epistolary sections, "factual" biography, and parts that belong to the tradition of the *Bildungsroman* (which, we could say, is to biography as the historical novel is to history). Of course, it is also a book about the scientific discovery of an almost literally earth-moving theory, which describes its early reception and, through anachronistic references to and quotations from later physicists and philosophers (from Kierkegaard to Einstein), suggests its later effects on the development of science up to our time. It is thus a book about an individual, a scientific problem, and an epoch; about the beginning of modernity, and about late modernity – perhaps *the end* of modernity – therefore also about us, and our own contemporary historical and cultural crisis.

With its challenging of the boundaries between historical fact and poetic creation, its mixing of past and present, its anachronistic presentation of Copernicus, *Doctor Copernicus* is a postmodern book, what Linda Hutcheon would define as "historiographic metafiction"; with its nostalgic desire for order and allusions to the Joycean *Bildungsroman* it also gestures towards modernism; the nineteenth century principle that history is the biography of great men also applies. The origins of the historical novel are in the Romantic period, when the link between "historical consciousness and cultural-political concepts of the emancipation of nations" gave rise to "a new conception of art as a means of aesthetic experience":⁴ *Doctor Copernicus* also bears the hallmark of such romantic origins of the genre, representing as it does the link between nationhood, history and mythology, including, we have seen, the construction of (but also the intolerance towards) a national mythology of identity around the figure of Copernicus.

Postmodern, modernist, nineteenth-century, romantic, early modern; Copernicus, Galileo, Kepler, Kierkegaard, Einstein: within the bookends of Copernicus at one end and the latter part of the twentieth century at the

other, the novel alludes to and establishes a relationship between the history of science, of historical writing, of biographical writing, of the form of the novel – all ways in which we have historically attempted to find ever better (and, as we realise, ever inadequate) ways to represent reality to ourselves. I have suggested above that the variety of genres explored in *Doctor Copernicus* can also be seen as a way of trying out the various forms through which the modern novel has attempted to represent character, subjectivity and the sense of our relationship with the world: Copernicus appears as a centre around which different generic forms rotate, encircling but not enclosing him, attracted by but unable to ever quite get to the essence or centre of the character. (The heliocentric model places the centre of the solar system in a mathematical point that is near to but does not coincide with the sun: we rotate around a void, as does Copernicus, as do our various attempts to represent identity or reality, whether scientifically or artistically.) There may thus be another reason why the novel references so many different generic models of writing: because they are all used up and need to be rethought, just like our conception of the world, the universe, and our place in it must be rethought. The old forms of expressing truths no longer serve us; but we can't discard them until we have new ones – in any case, *because this is literature*, we would not be able to discard them altogether and they remain part of our construction and understanding of reality. As Kuhn suggests, unlike science, which replaces old models with new ones, erasing previous explanations from the scientific field and relegating them to history or the museum, literature does not discard old models but includes them in its evolution, constantly returning to them, revising, rewriting and re-elaborating them: “Unlike art, science destroys its past”; “art can support, far more readily than science, a number of simultaneous incompatible traditions or schools” (Kuhn, “Comment” 345, 348). As John Barth proposed in 1967, the exhaustion of old forms requires not their erasure, but their re-signification.

It is in this context that two points of analogy between Collingwood's idea of history and Kuhn's history of science become especially relevant: while neither rejects the truth of facts and events, both unhinge them from a historical or scientific discourse that stakes its truth and authority on its adherence to such facts – for Collingwood, authority resides in the historian, for Kuhn in the community of scientists, and both accept the necessity of narrative structures that are in turn analogous, in various ways, to those of literature. The novelist Banville goes further in pursuing the analogy than either Collingwood or Kuhn, and his work posits that all of them are supreme and necessary fictions produced by our capacity to imagine, rationalise, and express.

As we have seen, while still a university student in Krakow, young Copernicus argues with one of his teachers, identifying in the old professor's defence of Ptolemy "a failure of nerve" (the phrase comes from Koestler 53-65) that stubbornly continues to sustain "the old reactionary dogmas" (29) despite the awareness that they no longer function adequately. In the metaphor of the pearl ("Out of all those weary hours of wading through the dry sands of a sealed mind there had been distilled one tiny precious drop of a pearly doubt," 29), the speck of grit that becomes jewel ("He turned the solution this way and that, admiring it, as it were turning in his fingers a flawless ravishing jewel," 85) references the way in which marginal data that the paradigm of normal science cannot sift accrete questions, until they lead to what Kuhn would call a scientific revolution or paradigm shift, and what *Doctor Copernicus* more poetically calls "a new and radical instauration" (83) after the slow inevitable "crashing down" of the old establishment (29).

The need to "keep our nerve" is taken up again by Banville in his 1981 talk, when he suggested that we are "on the threshold of a new *ism*":

We are continually being told that the novel is moribund, but the fact is, if we can keep our nerve, the novel is only beginning to explore its own possibilities. It can become the Supreme Fiction that Stevens dreamed poetry might be. If we keep our nerve.

Modernism has run its course. So also, for that matter, has post-modernism. I believe, at least I hope, that we are on the threshold of a new *ism*, a new synthesis. What will it be? I do not know. But I hope it will be an art which is honest enough to despair and yet go on; rigorous and controlled, cool and yet passionate, without delusions, aware of its own possibilities and its own limits; an art which knows that truth is arbitrary, that reality is multifarious, that language is not a clear lens.

Did I say *new*? What I have defined is as old as Homer. (16-17)

Out of the death of the medieval, pre-Copernican world came what we know as the Renaissance, the "re-birth," anticipating the "birth of man" of modernity that Michel Foucault describes in *The Order of Things*. Man was de-centred from the universe but found in himself a new centre on which to rebuild all knowledge and all faith: *Cogito, ergo sum*. If in the postmodern, post-humanist context this modern subject faces a "death" through the dissolving of its transcendence, reinterpreted as an effect of language and of desire, and the objectivity of external reality (scientific, historical), is recast, at least partly, as an effect of narrative, once again we must "keep our nerve" as these deaths will lead to new births, though we may not yet know what they are. Banville is specifically talking about artistic forms, but his "hope" can be thus taken to refer, more generally, to the intellectual and cultural (as well as political and economic) structures

of our society. Seeing the magnitude of the historical, political, cultural, religious upheavals that our world is experiencing today, over three decades after Banville's novel, we must certainly agree that we need to "keep our nerve" through this latest "Copernican revolution," and that exploring the forms that these revolutions take, their roots, and their possible consequences, is more than a literary game, much more than the amusing but shallow playfulness with forms that postmodernism has so often been accused of staging: it is, on the contrary, essential to our historical consciousness – a consciousness turned as much to the past as to the future; aware of the cyclical recurrence of crises; that we do not have *the* truth; and that we shall continue to endeavour to find new ways of describing reality and our place in the world, negotiating between alternative explanations; because it is only by accepting the provisional and contingent nature of our truths that we can recognise our individual and collective responsibility to history.

NOTES

¹ The book was first published posthumously in 1946, but this chapter dates to 1935.

² On the misuse of Kuhn and the differences that he identifies between the two models see especially John Neubauer, "Reflections."

³ This is the first in the "Revolutions Trilogy" that also includes *Kepler* (1981) and *The Newton Letter* (1982).

⁴ From the programme of "History and Its Literary Genres" (Lipica, 7-8 September 2006), at which this paper was presented.

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