‘PROMOTED BY HONG TAO, THE CHLAMYDIA HYPOTHESIS HAD BECOME WELL ESTABLISHED …’: UNDERSTANDING THE 2003 SEVERE ACUTE RESPIRATORY SYNDROME (SARS) EPIDEMIC – BUT WHICH ONE?

Frederick Attenborough

ABSTRACT

Purpose – The aims of this chapter are twofold – first, to develop an understanding of the ways in which primary historical data come to be transformed across generations of popular science histories of emerging epidemics; and second, to develop an understanding of the ways in which those transformations impact on our ability to know what really happened during those epidemics.

Approach – The chapter begins with a rhetorical analysis of one particularly influential account of the 2003 severe acute respiratory syndrome (SARS) outbreak. Therein, we learn that the race to discover the outbreak’s aetiology was tainted by scientific malpractice; that an
esteemed Chinese microbiologist, Dr. Hong, apparently promoted his own, patently false, aetiological discovery, stifled debate on the matter and, in doing so, held the international response to the outbreak back by a number of weeks. But how was this account rhetorically constructed? And how did it engage with Dr. Hong’s own research work?

Findings – Does Hong deserve to be remembered as an inept scientist? Subsequent accounts have been quick to repeat this one, founding text’s account, suggesting that ‘yes, he does’. This chapter, however, returns to the primary data, examines the ways in which the original account troped those data and moves to suggest that ‘no, he does not’.

Contributions to the field – Teasing out the more general implications of this particular case study, the chapter concludes with a discussion of the analytical gains that might accrue if other popular scientific histories of emerging epidemics were approached as ‘topics’ rather than ‘resources’.

INTRODUCTION

How do popular science writers construct their accounts of past emerging epidemics? How do they engage with and interpret their primary data: press conference transcripts, interviews, research articles and so on? Does the imperative of their genre – the telling of an engaging, dramatic story – lead them to foreground certain data and certain interpretations of those data at the expense of other data and other interpretations? And what happens after the first such account has been published? How do subsequent accounts relate to that one, founding text? Do they too engage with and interpret the primary data? Or do they simply accept the founding text as a final, definitive account of what really happened? These are the questions I want to try and explore in this chapter. In the process, my aims will be twofold: first, to develop an understanding of the ways in which primary historical data come to be transformed across generations of popular science histories of emerging epidemics; and second, to develop an understanding of the ways in which those transformations impact on our ability to know what really happened during those epidemics.

Whilst pursuing those aims, however, I will also be hoping to do something with a little more critical intent. Put simply, I will be looking for justice. The object of my care and attention will be a character that appears in many accounts of the 2003 severe acute respiratory syndrome (SARS) outbreak. A character by the name of Dr. Hong Tao. According to those
accounts, Dr. Hong was the Chinese microbiologist who sought, but failed (and failed spectacularly), to discover the aetiological agent responsible for causing the outbreak. But he did not just fail. For it seems that he also acted to ‘promote’ his discovery in such a way that other microbiologists in China were subsequently unable to put forward what was, ultimately, the correct aetiological claim. His failure, and his inability to accept his failure, it seems, managed to hold the international response to the outbreak back by a good number of weeks. Reading of his actions during early 2003, it is difficult not to understand Dr. Hong as one of the SARS outbreak’s great scientific losers. But does he deserve this reputation? I want to suggest not. In fact, I want to defend him. And here, the legal metaphor seems apt. Given the overall aims of this chapter, it seems only fair that it should come to act as something akin to a ‘scientific court of appeal’. Whilst seeking to understand how accounts of past epidemics relate to their primary data, we can safely leave our heroes – the Robert Kochs and the Louis Pasteurs of this world – to bask in their own accumulated glory. After all, they would have no interest in such a project. But our scientific losers? Well they would, to a man (and sometimes to a woman), be clamouring for a re-trial. And the very least a sociologist like myself can do is to take up the case of a character like Dr. Hong, asking whether or not he deserves his sentence of a life-long stretch lurking around amongst the discarded refuse in science’s back yard.¹

The case for the defence will be built around a close rhetorical examination of just one particular account of Hong’s actions: ‘China’s missed chance’ (CMC). CMC was a ‘news focus special report’ that appeared in the 18 July 2003 edition of the prestigious journal Science. Written by the highly respected science journalist Martin Enserink, it was the first article to tell of the outbreak during the ‘post-outbreak’ period. The interesting thing about CMC is that in order to understand Hong’s SARS laboratory work, in order to incorporate Hong into its overall narrative, it relies on just one piece of material evidence: a research article entitled ‘Chlamydia-like particles and coronavirus-like agents found in dead cases of atypical pneumonia by electron microscopy’ (CLA). Written by Dr. Hong and his research colleagues, it was published in the 25 April edition of the National Medical Journal of China. That CMC is dependent on CLA in this way generates an interesting analytical opportunity, and one that I seek to take advantage of. It arises because I too have access to CLA.² And in the first section of this chapter, CMC’s cross-examination commences with a discussion of the ways in which my own understanding of Hong’s laboratory work differs from Enserink’s. Reading of Hong’s actions in CMC it is difficult not to conjure the image of an inept scientist. Yet my own
reading leads me to suggest that Hong could, quite plausibly, have been represented in a far more favourable light. In section two, a great deal of attention is given over to understanding how CMC’s rhetorical structuring actually enabled Hong’s original conviction. Then, in a bid to strengthen the appeal case a little further, the third section explores the ways in which subsequent accounts of the SARS outbreak came to relate to, engage with and appropriate CMC. In doing so, two things become clear: first, that CMC was rapidly turned into a ‘definitive historical account’ of Hong’s actions, whilst Hong’s own account of his own actions was completely ignored; and second, that CMC’s account was, on a number of occasions, actually embellished, with some authors adding their own twists to the tale, accentuating Hong’s errors and personal failings to such an extent that CMC begins to appear as if the very model of restraint and fairness. A brief concluding section, the fourth section, looks up from this localised case in order to ask whether these processes might not actually be more general phenomena, inf(l)ecting other (seemingly) factual and (seemingly) unquestionable accounts of past emerging epidemics.

**CHINA’S MISSED CHANCE**

CMC tells of a race that developed between three scientific research groups during the early weeks of the outbreak. The prize sought by each was the discovery of ‘the cause of the new disease’ (2003, p. 294). The scientific research groups in question were: a World Health Organisation (WHO) laboratory network led by Dr. Klaus Stöhr, a research team working out of the Academy of Military Sciences (AMMS) in Beijing and led by Dr. Yang Ruifu and, finally, Dr. Hong’s research team at the Chinese Centre for Disease Control (CCDC), also in Beijing.

According to Enserink, the group that really won this race was the AMMS, led by Dr. Ruifu. ‘By the first week of March’, he suggests, ‘the group had tentative evidence that a new virus might indeed be linked to the epidemic’ (2003, p. 294). Having ‘grow[n] a virus of some sort from the samples in so-called vero cells’, ‘they [had] observed what looked like coronavirus particles in an electron micrograph’. The team ‘also discovered that serum from SARS patients could inhibit the growth of the virus – a key test to show a correlation between an isolated agent and a disease’ (2003, p. 295). As Enserink makes clear, having achieved all of this they were ‘weeks ahead’ of the researchers in the WHO laboratory network (ibid.). And yet the AMMS were, nevertheless, to be denied the prize of a ‘prominent place
in the history of the disease, and perhaps even a publication or two in a
prestigious scientific journal’ by that very same group (2003, p. 294). For on
16 April, some five weeks after the AMMS had reached the same
collection, it was the WHO research team that were to receive all the
plaudits, announcing at a press conference in front of the world’s media that
the causal agent was a hitherto unknown coronavirus. ‘Looking back’ at
this episode, Stöhr is quoted as suggesting that ‘had the AMMS researchers
reported their findings immediately, the larger group [the WHO SARS
laboratory network] might have been on the right trail much sooner’ (2003,
pp. 295–296). How had this situation arisen? Because, according to
Enserink, the AMMS ‘didn’t dare tell the world’ about their discovery
(2003, p. 294). Their silence, however, was not self-imposed, but forced upon
them through the actions of ‘an esteemed senior microbiologist and member
of the Chinese Academy of Engineering’ – Dr. Hong – and the institution
for which he worked – the CCDC (ibid.). In mid-February, Hong ‘proposed
that the agent was a new type of \textit{Chlamydia}’ (2003, p. 295). And even though
‘others suggested that it may have been something different altogether’
(ibid.), there was apparently no dissuading him: ‘promoted by Hong Tao, an
esteemed senior microbiologist and member of the Chinese Academy of
Engineering, the \textit{Chlamydia} hypothesis had become ... well established’
(2003, p. 294). The CCDC, in conjunction with other institutions in China,
subsequently forbade any further discussion of the aetiological question,
and moved to prevent others from expressing alternate views. In late March,
for instance, and ‘bolstered by WHO’s daily reports and new, more solid
data of their own, AMMS scientists reported their findings to the Ministry
of Health’ (2003, p. 296). The result? ‘The department stuck to the
\textit{Chlamydia theory}, and set up ‘a working group ... to control publicity
about SARS pathogen studies’ (ibid.). Indeed, it was only as late as the last
week of April, after the Chinese health minister had been sacked for
 mishandling the outbreak, that the coronavirus discovery came to receive
official acceptance within China (ibid.). But by then of course the AMMS
team had been pre-empted by the WHO, and it was too late for them to take
any credit for the discovery. This, it seems, was ‘China’s missed chance’.

Everything here centres on the WHO and the AMMS as the champions of
the coronavirus aetiological claim. Dr. Hong, on the other hand,
concentrates his attentions on a \textit{Chlamydia} bacterium. And, whereas the
former groups let their results speak for themselves, Dr. Hong ‘promote[s]’
his ‘\textit{Chlamydia} hypothesis’. In a sense, this is a fairly standard popular
scientific tale of the ‘good’ scientists (in this case, microbiologists) who get it
right, versus the ‘inept’ scientist who got it wrong.\textsuperscript{3} But what happens when
this tale is examined in a little more detail? Presented below is Enserink’s interpretation of Hong’s article, CLA:

In a paper in the 25 April National Medical Journal of China, Hong reported having found ‘Chlamydia-like particles’ in a total of seven patients. (In two, he also noted the presence of a coronavirus which by then had been proven to be the cause of SARS.) But he was not able to actually isolate the microbe or characterise it further, and Chlamydia was not found in most SARS patients. Moreover, antibodies to known Chlamydia species did not react with the tissue samples. Hong therefore proposed that the agent was a new type of Chlamydia, but others suggested that it may have been something different altogether. (2003, p. 295)

Now immediately it seems to me that there is something about this gloss that jars with CMC’s overall narrative. For therein, trapped within a parenthesis, is an acknowledgement that Hong had in fact ‘noted’ the coronavirus too. But before discussing this peculiarity at any great length, I want to present the abstract from the original source document CLA (the most relevant sections have been underlined):

OBJECTIVE: To explore the causative agents of the atypical pneumonia (also SARS) that occurred recently in some regions of [China]. METHOD: Organ samples of 7 dead cases of SARS were collected from Guangdong, Shanxi, Sichuan Provinces and Beijing for electron microscopic examination. 293 cell lines were inoculated with the materials derived from the lungs in order to isolate the causative agent(s). The agents in the organs and cell cultures were revealed by immunoassay. RESULTS: Both Chlamydia-like and coronavirus-like particles were found by electron microscope. Inclusion bodies containing elementary bodies, reticulate antibodies and intermediate bodies of Chlamydia-like agent were visualised in multiple organs from the 7 dead cases, including lungs (7 cases), spleens (2 cases), livers (2 cases), kidneys (3 cases) and lymph nodes (1 case), by ultrathin section EM [electron microscope]. In some few sections, coronavirus-like particles were concurrently seen. A coronavirus RNA-polymerase segment (440 bp) was amplified from the lung tissues of two cases. After inoculation with materials from the lung samples, similar Chlamydia-like particles were also found in the inoculated 293 cells. Since the Chlamydia-like agents visualized in both organs and cell cultures did not react with the genus specific antibodies against Chlamydia and monoclonal antibodies against C. pneumoniae and C. psittaci, the results might well be suggestive of a novel Chlamydia-like agent. CONCLUSION: Since the novel Chlamydia-like agent was found co-existing with a coronavirus-like agent in the dead cases of SARS, it appears most likely that both agents play some role in the disease. At the present time, however, it is not possible to determine whether these agents interact synergistically, or whether one follows another. This requires further study. (Hong et al., 2003, p. 632)

Not only Enserink’s gloss, but also his telling of ‘CMC’ more generally, starts to appear a little problematic once CLA is examined. Reading through this abstract it seems difficult not to draw the following conclusions: first, that Hong gave his (entirely plausible) coronavirus
findings far more attention than Enserink is allowing for; and second, that Hong was far less excited about his (entirely plausible) *Chlamydia* findings than Enserink is allowing for. Hong made it quite clear in CLA that he had not yet ruled out the possibility of the outbreak under investigation having a multifactorial aetiology; that the cases of SARS from which he had received samples might well have been caused by a complex interaction, or ‘synergy’, between both pathogens. But then, if these conclusions can be accepted, it is worth asking the following question: does CLA really support, back up or vindicate *in any way* CMC’s tale of the ‘good’ microbiologists versus the ‘inept’ microbiologist? I want to suggest not. And the rhetoric through which CMC manages this peculiar ‘mismatch’ will be the focus of attention in the following section, where, purely for reasons of space, I concentrate on CMC’s management of Hong’s coronavirus findings.

**THE DISCOVERY OF THE CORONAVIRUS**

There is one other curiosity about CMC’s formulation of CLA that needs some mention here. Every activity detailed within CLA, including Hong’s discovery of the coronavirus, took place between mid-late February and early March 2003. But if this is the case, then surely Hong’s coronavirus findings actually pre-empted both the AMMS group (by a few weeks) and the WHO–SARS group (by at least a month). Indeed, if the time period during which Hong’s laboratory research took place is taken into account, then Hong can quite easily be cast in the role of microbiological hero! Whether he had adjudged the coronavirus to be the one singular cause or part of a synergistic causal process would, in such a casting, be deemed irrelevant – for he, and he alone, would have been the first microbiologist to see this hitherto unknown coronavirus. The curious thing about CMC’s interpretation of CLA, however, is that it possesses a number of rhetorical devices that serve to background just such a version of events.

**FINDINGS AND NOTINGS**

Consider, for example, the following extract: ‘Hong reported having found “*Chlamydia*-like particles” in a total of seven patients. (In two, he also noted the presence of a coronavirus)’ (Enserink, 2003, p. 295). Although both sentences seek to capture and represent a process of discovery, they do so in different ways. And this difference, though slight, is highly consequential.
To make this point a little clearer the sentential units can be broken down into their constituent parts: actor, process and goal:

| Hong      | Reports | Finding | Chlamydia |
|-----------|---------|---------|-----------|
| [Actor]   | [Process 1] | [Process 2] | [Goal] |
| Hong      | Notes   |         | Coronavirus |

In both, the actor quite obviously remains as Hong. The goals, too, remain similar – although differently named entities, they are, nevertheless, entities of a similar, pathogenic order. The real difference, the difference that makes a difference, is to be found when the processes are examined. In the first instance, Hong ‘reports’ on his engagement with Chlamydia. ‘To report’ is to perform not a material, but a mental action process. Considered as an action in and of itself, a report would involve a conscious being sensing a phenomenon before then making that which had been sensed known to others. But in this particular instance the report is a report that a pathogen had been ‘found’. And this second process verb, ‘to find’, immediately implies that some kind of material action process had also taken place – a process of doing and not simply of sensing. In order for Hong’s ‘report’ to have become possible, he would have had to have made some kind of material contact with the bacterium through, say, a laboratory instrument. To find, in other words, is to found; to found a relationship, the actor having at least a degree of human interest in the object found. In the second sentence, Hong ‘notes the presence of’ a coronavirus. To ‘note’ is to do something very similar to reporting. Both are mental process actions that involve sensing. But unlike in the first sentence, this mental process action is not followed by a material process action. Hong, as a conscious being, simply notes the presence of a phenomenon before making that which he had sensed apparent to others. No material contact with the coronavirus is implied in any of this.

Is this rhetorically significant? I want to suggest that it is. Dr. Hong himself, for instance, suggested in CLA that ‘both Chlamydia-like and coronavirus-like particles were found by electron microscope’. Indeed, not once in CLA does he use the mental process verb ‘to note’ to describe his coronavirus work. Apart from the electron microscope work in which he ‘saw’ the coronavirus, everything revolves around material process verbs: to find, to amplify, to prepare and so on. The effect of this ‘deletion of materiality’ is a definite structuring of the ways in which we, as readers, are able to come to an understanding of Hong’s laboratory work. Why? Because as Simpson (2004, p. 23, emphasis added) has noted in relation to
Unlike material processes which have their provenance in the physical world, mental processes inhabit and reflect the world of consciousness … the entity ‘sensed’ in a mental process is not directly affected by the process, and this makes it of a somewhat different order to the role of Goal in a material process.

So does the act of ‘noting’ the presence of something indicate that a scientific discovery has actually been made? Perhaps not. Perhaps it suggests an action that teeters on the edge of not being a discovery at all. To ‘note’ is merely to acknowledge the presence of an object in passing, remaining at a certain remove from that object before then moving on somewhere else. It is, on Simpson’s reading, to leave the entity ‘unaffected’ by the process.

Another way to make the rhetorical significance of Enserink’s lexical choices clear is to consider culturally entrenched ways of using language in scientific practice. After all, microbiologists like Dr. Hong do not build their careers around ‘notings’. They build them around ‘findings’. In microbiology, materiality is everything. So at the very least it seems possible to suggest that a ‘noting’ does not suggest quite such a clear cut a discovery as a ‘finding’. And although previous studies of rhetoric have noted that different process verbs can generate different degrees of ‘opacity’ when used to portray agency and intention, it seems that here, in CMC, they end up manipulating not human agency, but rather, human interest. Where CLA indicated that both the coronavirus and the Chlamydia findings were of equal ontological standing, leaving their status as discovered objects clear and uncomplicated, CMC erodes this sense of equality via the use of process verbs that evoke differing levels of actorial contact with, and interest in, their end–goal.

HONG’S COGNITIVE BRACKETS

Backgrounding these process actions now, I want to throw something else into relief within that two-sentence extract from CMC – the parenthesis:

Hong reported having found ‘Chlamydia-like particles’ in a total of seven patients. (In two, he also noted the presence of a coronavirus which by then had been proven to be the cause of SARS). (2003, p. 295)

Why is it there? What is its purpose? On the face of it, its stylistic significance seems clear: it serves to surround and completely cut off from the rest of the text the only reference that CMC makes to the fact that Hong found coronavirus as well as Chlamydia. That ‘Chlamydia-like particles’ – in the plural – were found in all seven of Hong’s samples is a point that is left
outside the parenthesis. That ‘a coronavirus’ – in the singular – was noted in just two samples is a point that is placed inside the parenthesis. This, then, is what it does. But it is not at all clear why it is made to do what it does here. Indeed, the separation is especially curious given that Hong’s own research article goes out of its way to avoid making any such separation. The very title of the article – ‘Chlamydia-like and coronavirus-like agents found in dead cases …’ – seeks to draw the two discoveries together. Further, in CLA’s conclusions, their entanglement with one another is once again made clear: ‘since the novel Chlamydia-like agent was found co-existing with a coronavirus-like agent in the dead cases of SARS, it appears most likely that both agents play some role in the disease’ (Hong et al., 2003, p. 636). CMC’s brackets, however, cut off all links between the two discoveries. And although little has been written about parentheses in rhetorical theory, the concept of enactment, taken from the field of stylistics, helps to make the rhetorical significance of this ‘cutting’ operation a little clearer. The critical and stylistic assumption underpinning the concept is that literary forms can mime the meanings they seek to express. So, for instance, in Dickens’s *Oliver Twist*, a stylistician might note how the following passage seeks to enact movement, noise and confusion in and as a description of the actions of:

Away they ran, pell-mell, helter-skelter, slap-dash, tearing, yelling, screaming, knocking down the passengers as they turn corners, rousing up the dogs, and astonishing the fowls: and streets, squares and courts re-echo with the sound.

My argument is that CMC’s brackets work to produce a similar effect in relation to Hong’s scientific practice. They enact the ‘cognitive brackets’ that Hong must have placed around his coronavirus ‘noting’ in order to come to the final Chlamydia conclusion that he ended up ‘promoting’: Hong dismissed the aetiological significance of the ‘noting’, and thus the brackets enact the dismissal. Moreover, given what is placed inside – singular coronavirus findings – and what is placed outside – multiple Chlamydia findings – they start to look less like CMC’s own interpretation, and more like a faithful attempt at enactment. The very presence of the parenthesis, the cognitive brackets, is in this way granted an explanation. And although not perhaps entirely convincing to a reader with some first-hand knowledge of CLA, it is at least plausible: Hong’s context of discovery, it seems, was a context built around quantitative criteria. Fascinated by the Chlamydia-like particles and their abundance in relation to the coronavirus particles, Hong completely overlooked the aetiological significance of the latter. Through the use of the parenthesis, CMC generates a sense that, even if we can allow...
that Hong’s coronavirus was a discovery rather than a noting, it was, nevertheless, a discovery that Hong himself regarded as secondary and unimportant in relation to *Chlamydia*.

‘BY THEN …’

Things, it seems, could have been very different. And nowhere was this more so than when it came to the question of ‘who was first?’ CLA could quite easily have been used to index the work of a scientific group that had managed, quite impressively, to pre-empt both the AMMS group (by a few weeks) and the WHO laboratory network (by at least a month). But Enserink manages not to treat CLA in this way. In fact, he manages to treat it in quite the opposite way, with the result that Dr. Hong starts to appear as the pre-empted scientist! So how is this reversal achieved? Consider the extract from CMC one final time:

In a paper in the 25 April *National Medical Journal of China*, Hong reported having found ‘*Chlamydia*-like particles’ in a total of seven patients. (In two, he also noted the presence of a coronavirus which by then had been proven to be the cause of SARS). (Enserink, 2003, p. 295)

In the sentence immediately before the parenthesis the reader watches through Enserink’s eyes as a CLA research finding is summarised. According to Enserink, Hong used CLA to ‘report’ having found *Chlamydia*-like particles. The focalising subject here is Enserink, the focalised object the research article. At no stage during the sentence is there any possibility of observing the actual act of discovery. Because CLA, and not Hong’s laboratory work, acts as the focalised object, the reader is placed at a remove from the actual action. The result of this ‘distance’ is the creation of a temporal lag, a lag between the act of finding and the act of communicating a finding. At some point in the past, it seems, Hong had found ‘*Chlamydia*-like particles’. Then, at some point later on, he reported this discovery in a research article. But in actual fact there is no need to be so vague about the timing of all of this. For Enserink had already made clear that the direct act of finding took place ‘on 18 February’ (2003, p. 295). And, as is clear from the extract presented above, the research article based on those findings was published ‘in the 25 April *National Medical Journal of China*’. As a consequence, the article itself had to have been submitted for publication some time between ‘18 February’ and ‘25 April’.

So much is clear. But when we turn to examine the sentence that appears in the parenthesis, the identity of the focalised object seems a little unclear.
The reason for this ambiguity is a lack of any reference to ‘reporting’, or indeed to any intermediary separating Enserink, our focaliser, from Hong’s laboratory work. Is the focalised object Hong’s research article? Or his actual laboratory work? Is Enserink watching a report of Hong watching the coronavirus, or is he watching Hong watching the coronavirus? To me, the fact that these questions can be asked at all admits the possibility of more than one structural interpretation of the text. In the clause prior to the parenthesis, for instance, such questions would have made no sense: one knew, quite clearly, that the act of finding and the act of communicating the finding were temporally separate.

For reasons that I hope will become clear, I want to proceed by playing up to my feeling that Enserink is indeed suggesting that he was there, watching Hong in his laboratory. As a result, when he writes that ‘in two [samples] he also noted the presence of a coronavirus’, we are watching through Enserink’s eyes as Hong notes, in two patient samples, the presence of coronavirus. The consequence of this immediacy is that any sense of a lag time between the finding and the act of communicating the finding is lost. In classical rhetorical terms, we no longer watch as Enserink ‘tells’ of something. Instead, we watch as Enserink ‘shows’ us an act that appears to be fully present to him. But, if this is so, what we need to ask now is when is Enserink’s immediacy in this formulation? When is he watching Hong doing his noting? A clue here is the deictic marker ‘by then’ in the second-half of the sentence. It anchors Enserink, the focaliser, as he watches Hong. But if it was ‘by then’, then when was this ‘by then’? Let us run through some of the dates that were mentioned above to try and answer this question. Was ‘by then’ 18 February, the date when Hong found his Chlamydia-like particles? No. It cannot have been. Why? Because ‘by then’ has to suggest a date after 16 April, that is, the date on which the WHO officially announced that the coronavirus was the causal agent of SARS. By implication, the only way in which Enserink’s ‘by then’ could be referring to 18 February was if it was somehow trying to suggest that Hong, in some bizarrely schizophrenic manoeuvre, had managed to pre-empt himself (‘in two he also noted the presence of a coronavirus, which by then he had already discovered …’). Let us reject this possibility.

So what about 25 April, the date on which the article was published? Before answering this question directly, let us imagine for a moment that I was wrong in playing up to my suspicion that Enserink had ‘told’ us of the Chlamydia finding, yet ‘shown’ us, very directly, the coronavirus discovery. Let us imagine, instead, that in both cases he had been focalising Hong’s research article. If this were so, then his ‘by then’ would be a reference to the
research article: ‘by then [25 April when the article was published] ...’. And yet, he surely cannot have been making such a reference. Why? Because in the case of Chlamydia he had already admitted that the act of finding took place on ‘18 February’. He had, in other words, already admitted that the act of finding took place before the WHO made their announcement on 16 April. Despite the fact that the article had been published on 25 April, then, the Chlamydia findings had been made on 18 February. By implication, if the coronavirus discovery had taken place on or around that same day, or indeed at any point before 16 April, then irrespective of the date when the article was published, Enserink would, logically, have had to admit that Hong, in ‘noting’ the coronavirus, had pre-empted both the AMMS and the WHO laboratory network. What I take from all of this sleuthing around is a proof that Enserink’s ‘by then’ simply has to be a reference to the coronavirus discovery, and the coronavirus discovery alone. What I also take from it is a certain confidence that my suspicions were correct: Enserink was indeed playing around with the difference between ‘telling’ and ‘showing’ in his reporting of the two discoveries. The coronavirus findings, Enserink would have us believe, were somehow conducted separately and apart from the Chlamydia findings.

So, let us ask the question again and, this time, attempt a direct answer: was ‘by then’ 25 April? No. For the coronavirus findings to have been made and published in a journal on the very same day would, of course, have been impossible. But we are, nevertheless, closer to the correct answer now. For there was in fact a little more time for Enserink to play around with in his reference to ‘by then’. As I noted above, and by Enserink’s own admission, Hong’s article must have been submitted for publication some time between ‘18 February’ and ‘25 April’. If the coronavirus discovery was already passé by the time the article appeared, then Hong’s coronavirus discovery could only have been made in the nine days separating 16 April and 25 April. This, I want to suggest, is the when of Enserink’s ‘by then’. It is, I submit, the only possible way in which his reference to ‘by then’ could have made any sense at all.

Playing around with a direct focalisation strategy, placing the coronavirus results in a parenthesis and appending those results with the deictic marker ‘by then’, Enserink brings Hong’s coronavirus work forward into a time when it is (was?) already passé. Indeed, this rhetorical strategy is aided by the fact that CMC has already suggested, three paragraphs beforehand, that Hong’s Chlamydia ‘hypothesis’ was already ‘well established’ in China. The coronavirus discovery, we could easily start to suspect, was a ‘noting’ that came afterwards. And this effect, rather unsurprisingly, does not allow Hong to appear as a very able scientist. Instead of representing ‘the first
scientist to discover the coronavirus’, he now cuts a rather forlorn, buffoon-like figure. ‘What’, we might conceivably ask based on a reading of CMC, ‘was Hong doing dithering over the identity of the causal agent when by then everyone knew that the agent was, in fact, a coronavirus?’

If this is indeed what Enserink is suggesting, then it is grossly unfair. All the laboratory work reported therein was quite clearly carried out at the same time: February/March 2003. Even a cursory glance at CLA would make this apparent. For whatever else it does, CLA indexes the hard scientific labour that went into its production. As with the AMMS’ work, cell lines were inoculated with materials derived from SARS patients, and electron microscope examinations, serological tests and polymerase chain reaction (PCR) tests were conducted. Even by Enserink’s account, this kind of work took Ruifu’s team a full 12 days – from at least 14 February to at least 26 February. Yet CMC’s ‘by then’ seems to be suggesting that Hong began his coronavirus work after 16 April. If this were so, then in the nine days between 16 April and 25 April, Hong would have had to have done his experimental work, written a five-page scientific report, had it peer-reviewed and then published in China’s most prestigious science journal. Put like this, the suggestion starts to appear somewhat implausible.

But if it is so implausible, then why even attempt to suggest that the coronavirus discovery was in some way passé? Because, I submit, it represented the only way in which Enserink could protect CMC’s overall story. In order for that story to work, Hong had to be around to make a (patently) false Chlamydia claim. Granted, CMC could have represented Hong as the microbiologist who saw the coronavirus before anyone else, just as it could have represented him as a microbiologist who had taken the coronavirus’ presence in patient samples as seriously as that of his other discovery, Chlamydia. But if it had, then the suggestion that Hong, having made both discoveries, ‘promoted’ his Chlamydia hypothesis whilst ignoring his coronavirus findings would have started to appear a little less believable. At the very least it would have been an idea requiring some further explanation. And that, of course, was precisely the kind of ‘further explanation’ that Enserink, relying so heavily on the evidence presented in CLA, could not have given.

REPLICATION AND EMBELLISHMENT

One final question is the following: what happened to CMC after it had been published? For if the fate of Enserink’s account was in the hands of later
readers, then so too was Hong’s reputation. If CMC had been neither read nor cited, then its portrayal of this Chinese microbiologist would have made little impact on our understandings of the SARS outbreak. But the fact is that CMC quickly became a key source for subsequent accounts. As of April 2009, 18 English language scientific research papers containing references to CMC had been published. And whilst it is not that unusual for scientific research papers to cite popular scientific texts, the fact that all 18 did so approvingly, elevating a work of popular science to the status of ‘definitive historical account’, is a little unusual. What we find in those accounts is a form of repetition, as in the following research article, written by a research team from the Institute of Medical Virology, Frankfurt, Germany, and published in the *Journal of Clinical Virology*:

Almost nobody knew at that stage that virologists in Beijing had already discovered a new virus in samples from some of the earliest SARS patients. However, the official line in China at the time was that the novel ‘atypical pneumonia’ was caused by *Chlamydia* (Enserink, 2003; Berger, Drosten, Doerr, Sturmer, & Preiser, 2004, pp. 13–14)

As might be expected in a scientific research article, actors and their actions are backgrounded, whilst broad processes come to the fore. In this sense, Dr. Hong is ‘let off the hook’. And yet, what I find so striking here is the citation strategy. If the metaphor of the ‘official line’ catches your eye, if it hints at some kind of scientific malpractice, then you have a reputable source to turn to in order to find out more: ‘CMC’. But what of Hong’s own research article? Despite the fact that the German research team were writing an article of a similar order to Hong’s – that is, one that discussed primary scientific knowledge – they eschew any reference to his primary research article in favour of a popular science article that glosses it. This same strategy is at work in each of the 18 research articles: an approving and unquestioning citation of CMC, yet no citation of Hong’s research article. There is something else to bear in mind here too. For when the number of citations received by those 18 research articles are added together, a total of 478 citations is generated. At the very least, then, it is possible to suggest that whilst all of those articles would have come into contact with CMC as a definitive historical account, none would necessarily have learnt anything of CLA, that definitive historical account’s primary source.

But what about popular science accounts? In a sense, they were the accounts that really mattered in mediating an understanding of the outbreak. For most of us today the reality of something like SARS comes to us not through articles in the *Journal of Virology*, but rather, through the filter of journalistic language and imagery. So how did *they* engage with and
appropriate CMC? As with the scientific research articles discussed above, a common strategy was repetition: each account citing CMC approvingly, and ignoring CLA. The one difference is that there, in the world of popular science, the character of Dr. Hong is suddenly centre-stage. But in those articles another form of appropriation is also apparent: embellishment. Consider the following extracts:

1. In mid-February, the Institute of Virology also in Beijing, under China’s national CDC received two lung tissues … the samples were then divided into three parts: one for Hong Tao, the CDC’s chief virologist and CAE member to conduct an electron microscope examination, one for virologist Li Dexin to run the PCR testing and the third for bacterium cultivation purposes. Hong soon claimed, after examining it under the electron microscope, that it was Chlamydia – a bacterium notorious for being the pathogen of a common sexually transmitted disease which is not generally fatal – that was the cause of the atypical pneumonia. (Cao, 2004, pp. 262–286)

2. The new rumours … came from Guangdong … A senior local scientist maintained that chlamydiae [sic] bacteria had caused the outbreak. The theory was so prevailing that it proved inhibiting in a culture of deference to authority and seniority. When scientists in Beijing identified a new virus in late February, they chose not to say anything about it. (Balasegaram & Schnur, 2006, p. 75)

3. The medical community’s understanding of the true aetiology of SARS was delayed significantly by a February announcement from a senior scientist at the Chinese Centre for Disease Control that he suspected the infectious agent was Chlamydia – a commonly understood bacterial agent that would not have warranted heightened concern of investigation. (Mahmoud & Lemon, 2004, p. 4)

Gone from extract 3, for instance, are any references to Chinese institutions: the CCDC, the Chinese Ministry of Health and so on. It is now Hong, and Hong alone, who stands responsible for the false claim. The all powerful, yet totally inept superman. A line of moral responsibility is drawn, leading straight from this ‘senior scientist’ to the ‘significant delay’ in the medical community’s attempts to get to grips with the outbreak. Even the identity of Hong’s Chlamydia-like particles is now characterised in such a way as to make him appear ridiculous. In extract 1, for instance, we are able to laugh at a ‘fact’ that the cited source, CMC, never mentions: Hong’s belief that a sexually transmitted infection could have caused an outbreak of upper respiratory tract disease. And yet the joke, I would suggest, is on the author of extract 1. For there is more than one Chlamydia ‘bacterium’. Hong, in CLA, merely refers to the viral family Chlamydiaceae, of the class Chlamydiae. Included within this family are two genera: Chlamydia and Chlamydophila. The species Chlamydia trachomatis, which causes ‘sexually transmitted disease’, is only one of the three Chlamydia species, and only
one of the nine species included within the overall family Chlamydiaceae. In CLA, Hong never mentions \textit{C. trachomatis}. But he does mention \textit{Chlamydia pneumoniae} and \textit{Chlamydia psittaci}, species which are both known to cause pneumonia-like illness. And finally, consider extract 2. Here, Dr. Hong even has his place of work and his geographical location within China manipulated! Cast in the role of ‘local doctor from the rural provinces’, Hong-the-simpleton now appears only in order to frustrate the AMMS, the thrusting, big city research group from Beijing.

These repetitions and embellishments perhaps represent the \textit{real} tragedy for Dr. Hong. Whereas CMC at least allowed the reader to catch sight of Hong’s double finding – coronavirus and \textit{Chlamydia}-like particles – these accounts do not. Foregrounded in each and every case, and in some cases with an almost \textit{sadistic} pleasure, is the \textit{Chlamydia} discovery and the \textit{Chlamydia} discovery alone. In CMC one could still hear the faint murmurings of a reasonable scientist considering the possibility of the coronavirus. But here, in these texts, that scientist has finally fallen silent.

**CONCLUSIONS**

In this chapter I have sought to defend Dr. Hong in a hastily assembled scientific court of appeal. I have, in short, been looking for justice. Have I found it? Well, I have made clear the transformations that Hong’s account of his own actions underwent at the hands of others. And I have also made clear the extent to which those subsequent accounts can, with a little rhetorical effort, be called into question. That, however, is all I have been able to achieve. Put more accurately, it is all that I \textit{could} have achieved. For the jury in this court is you, dear reader. Have I convinced you? Is Dr. Hong to receive a reprieve? A pardon, perhaps? His fate is in your hands now, not mine.

His fate, but perhaps the fate of others too. For what is perhaps most interesting about this particular episode is the epidemic of \textit{literature} that the epidemic \textit{disease} seems to have generated. Were the rhetorical transformations, appropriations and embellishments at work in this one localised instance unusual? I would suggest not. Indeed, if emerging \textit{disease} epidemics can be said to imply unpredictability and rapid evolutionary mutation, then perhaps historical accounts, in seeking to interpret and to story them, take on some of those very same characteristics: the \textit{disease} epidemic and the \textit{literary} epidemic; the pathogen as tropic and the trope as pathogenic. But then, if this is so, it raises an interesting (rhetorical) question, and one that I want to leave the jury to ponder: who would bet against there being plenty
more Dr. Hongs out there, that is, scientists of all kinds, from all eras and all corners of the world, lost in the prison-house of language and in need of sociological representation?

NOTES

1. Here I am paraphrasing Bloor ([1976]1991, p. 30).
2. Hong’s research article is available through the U.S. National Library of Medicine’s online database, PubMed. Having retrieved a copy, I then had the text translated from Chinese to English.
3. That is, ‘fairly standard’ given the claims of those who study popular science writing: ‘many popular science books promote a version of science that is contrasted starkly with the ‘other’ of science – or at least the ‘other’ that popular science writers want to identify – namely, foolishness’ (Erickson, 2005, p. 148).
4. The distinction between actor, process and goal is drawn from Simpson (2004, pp. 22–23).
5. On the distinction between material and mental action processes, see Simpson (2004, pp. 185–186).
6. In particular, see Potter’s (1996) analysis of the construction of factual descriptive accounts, and Marlin’s analysis of ‘intention-promoting’ verbs (1984, pp. 26–29).
7. On the lack of attention to the rhetorical force of the parenthesis in modern literary theory, see Williams (1993).
8. This particular example is taken from Wales (2001, p. 125).
9. The concept of focalisation, drawn from the field of narratology, suggests that all stories are presented in a text through the mediation of a particular ‘perspective’. In any study of focalisation, the key question is ‘who is the immediate seer here …?’ (Toolan, 2001, p. 63).

ACKNOWLEDGMENT

I would like to thank Ananya Mukherjea for her initial, and extremely helpful, debunking of my initial debunking of Enserink’s debunking.

REFERENCES

Balasegaram, M., & Schnur, A. (2006). China: From denial to mass mobilization. In: S. Omi (Ed.), SARS: How a global epidemic was stopped. Geneva: World Health Organisation Press.
Berger, A., Drosten, C., Doerr, H., Sturmer, M., & Preiser, W. (2004). SARS – paradigm of an emerging viral infection. Journal of Clinical Virology, 29, 13–22.
Bloor, D. ([1976] 1991). Knowledge and social imagery. London: University of Chicago Press.
Cao, C. (2004). SARS: ‘Waterloo’ of Chinese science. *China: An International Journal, 2*(2), 262–286.
Enserink, M. (2003). China’s missed chance. *Science, 301*, 294–296.
Erickson, M. (2005). *Science, culture and society: Understanding science in the 21st century*. Cambridge: Polity Press.
Hong, T., Wang, J., Sun, Y., Duan, S., Chen, L., Qu, J., et al. (2003). *Chlamydia*-like and coronavirus-like agents found in dead cases of atypical pneumonia by electron microscopy. Zhonghua Yi Xue Za Zhi, 83(8), 632–636.
Mahmoud, A., & Lemon, S. (2004). Summary and assessment. In: A. Mahmoud (Ed.), *Learning from SARS*. Washington: National Academies Press.
Marlin, R. (1984). The rhetoric of action description. *Informal Logic, 6*, 26–29.
Potter, J. (1996). *Representing reality*. London: Sage.
Simpson, P. (2004). *Stylistics: A resource book for students*. London: Routledge.
Toolan, M. (2001). *Narrative: A critical linguistic introduction*. London: Routledge.
Wales, K. (2001). *A dictionary of stylistics*. Harlow: Pearson.
Williams, R. (1993). Reading the parenthesis. *SubStance, 22*, 53–66.