Contents

Genesis

It was 2001; I was basking in the glory of setting an ATH where teams actually found the treasure (without supplementary clues) when I just happened to hear the first few lines of "*The Hitchhiker's Guide to the Galaxy*" by Douglas Adams.

> *And then, one Thursday, …, one girl sitting on her own in a small cafe in Rickmansworth suddenly realized what it was that had been going wrong all this time, and she finally knew how the world could be made a good and happy place. … Sadly, however, before she could get to a phone to tell anyone about it, a terribly stupid catastrophe occurred, and the idea was lost forever.*

I had already been thinking about an ATH with Darwin as the main theme. Jeanne, my wife, had been on a course and it seemed there was a lot more to him than just evolution. More people should know I thought. 2009 would be a great year to set the ATH since it would be the 200th anniversary of Darwin's birth and the 150th anniversary of the publication of "*On the Origin of Species*".

I had also become fascinated with Google Earth and great circles. Most of the ATHs up to then had treasure locations within the M25. Wouldn't it be great if competitors had to start with a Google Earth globe, draw great circles and then zoom into their intersection to find the treasure? No need for a complex message describing the route.

I had never understood the sextant or how navigators managed at sea and after a bit of research into ancient navigation devices I thought there must be a way of getting ATHers to use navigation devices through the ages – although I had no idea how.

Also I quite liked the pinhole cipher where spies make pinholes in letters in a newspaper and casually discard the newspaper for their contact to collect. This was concealment in plain sight and was one of the few simple codes that had not been used in an ATH before. Even better it had a low profile in code breaking books, presumably because it was so simple.

This was not going to be a web based hunt. In the 2002 Kit & Philip Marlowe hunt we entered Park Wood, unusually for an ATH, in daylight. As we closed in on the treasure so did other teams each readily identifiable by the brilliantly colourful front page sticking out of ATHers pockets. That's what I wanted, some memorable artwork. So a paper based ATH on the surface although it would be delivered through pdf and I planned to exploit its many features.

So I had a location, a theme, a different way of getting to the treasure, something new for ATHers to learn, a new cipher, a technology base and a target year to set my next ATH – I was set.

The Long Road to ATH2015

You can have too much time to do something and that was clearly the case here.

There was a little blip of activity in early 2007 when the idea for the ATH Corporation bubbled up. I spent a few happy hours making up a suitable logo from a manipulated Easter Island head. Originally the strap line of "*...know why*" was going to be just that, another typically meaningless corporate mission statement, until the penny dropped that this could be "*no Y*".

Because I had so much time I didn't push to be a future setter. Whenever I thought about it there was a full pipeline of future setters. New blood was coming in all the time and experienced setters were keen to repeat their success. So time drifted by and I didn't secure a future setter slot for another 10 years and then it was still several years out.

However, I was developing my ideas over the 14 years between the inception of the idea and bringing it to fruition. The development was not linear nor was it building incrementally to a finished product. There were lots of stops and starts and trashing of cherished concepts.

2009, Darwin's anniversary, came and went and I had got a bit disillusioned with Darwin anyway. Fitzroy the captain of the Beagle seemed a much more interesting character. During a walking trip to Patagonia where we trekked around three sides of Monte Fitz Roy (named after the great man) I had another flash of inspiration. Perhaps my great circles could be anchored at one end to a Beagle mooring. All I needed to do was to draw a series of great circles through Beagle moorings and the treasure location and just look

along the great circles to find some locations with a common theme. The locations would need to be reasonably near the treasure location so that they crossed within a reasonably tight area. I started to look at this but my skills with Google Earth and drawing great circles were poor and they disappeared when I zoomed in. This appeared to be a bug and I posted it as such, 1123, and got some support. Unfortunately in 2009 Google closed the bug as "*wontfix*". However, I was optimistic that a solution would present itself, after all I had lots of time.

The Treasure Location

Since Rickmansworth was to be where the treasure was to be hidden I thought I had better have a good look around and I made several trips in the early part of the millennium and started researching Rickmansworth itself. Regrettably I couldn't find a suitable café but the Brown Sugar Deli looked a suitable compromise.

Rickmansworth is the site of Batchworth Locks. An iconic location on the canal network where there are two locks side by side and it is much photographed. Surely I must include this and I tramped around the canal towpath looking for a suitable site to hide the treasure. There was even the track of a disused railway nearby that seemed suitable. After several visits I branched out and found Croxleyhall Wood. It was some way from the centre of Rickmansworth, not immediately obvious to ATHers who I hoped would be drawn to the canal since many would know of my great interest in the subject.

So I tramped through the wood and found a huge fallen tree trunk. My idea was to cut into the trunk and put in a spring loaded chamber that would pop out when a certain combination of actions was performed. I was a little concerned about who owned the land of the wood. I didn't seem to be on a public footpath and the road through the middle looked private. However, it had the feel of a great place to be wandering around in the middle of the night looking for treasure. So a few years into the millennium I had a treasure location - I was set.

When I was allocated my future setter slot I thought I ought to go back to the wood and check it out around Christmas time to see what it looked like. The good news was that the wood had been taken in hand by the local authority and there were paths and interpretation boards. The bad news was that my fallen tree had rotted away and was unusable and there were no alternatives.

Necessity is the mother of invention. I wanted to hide the treasure in an unusual way, I didn't want to have a message describing the route to the treasure. I then remembered an electronic kit that I had bought (but not yet built) that turned a light on and off using any TV remote. In a flash of inspiration (not IR, you cannot see it without a smartphone) it all came together. I would bury the treasure and run a wire to a fake tree which would contain the IR sensor. ATHers would get to the approximate location using the intersection of great circles and then fan out firing their TV remotes until a Logica L illuminated over the treasure – what a great midnight experience. I really was set now.

Only two years to go, time to get serious

I was thinking of doing most of the ATH myself and getting the team involved towards the end. As the basic idea of the ATH was trivially simple I didn't want to expose it to a large number of people and it becoming a topic of conversation. ATHers pick up on the most insignificant snippets of information, and sometimes make the correct interpretation.

However, I was having to admit to myself that the Google Earth technology was beyond me and I persuaded Anthony that he might like to look at this problem for me. Anthony found that you could zoom in on short lines but not the long lines of a great circle so he constructed the great circle from thousands of short lines. Even better he built an Excel based tool that made construction of Google Earth great circles simple and showed that they could be used in Google Maps as well. All I had to do now was chase down the great circles for locations with a common theme.

With Anthony I also started to look at how we could miniaturise high resolution graphics (and pinholes) in pdf files. Too often acrobat optimisation would kick into play and the high resolution would simply fade away since clearly it would not print on A4.

Time also to look for a desktop publishing tool. I would have liked to use InDesign from Adobe, I had used PageMaker, its predecessor. for my previous hunts. I even had a copy of InDesign. However, it was an early version, very user unfriendly and almost certainly not usable unless I upgraded at a very considerable cost. So I looked around for the best option at the next level down from professional graphic designer tools and Serif PagePlus X8[1] seemed to fit the bill. Also if you wait around there are repeated price reduction offers. There is a learning curve with a tool as powerful as this and whenever I wanted a feature; layers, fine control over pdf resolution, master pages, etc. it was there and easy to use. I initially used the starter version in early 2014. However, when things started to get serious in the middle of 2015 I bought the fully featured tool at £50. I already had Photoshop Elements 9, which although rather old seemed good enough for the graphics tasks. There is a Serif tool that does a similar job, DrawPlus, and I used its starter edition for the saxophone fingering code which I wanted in SVG format (to cut down the size).

2015

It was clear to Jeanne that I had stalled, there were lots of ideas but nothing to show. So all ATHers should be grateful, or not, that she nagged me into getting help. I could see she was right and this was a project in serious danger of not delivering, time to get a team together and do some project management. So on March 25th Simon, Anthony and I had our first working lunch. I presented my outline for the hunt and where I needed help. At the end of the lunch the "*to do*" list was extensive and the done list minimal but the team was confident.

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[1] In the event it turned out to be a professional level tool. Easy to use and well able to handle file sizes in the tens of megabytes and the 400 graphics of varying sizes and resolutions that we threw at it. Only once did we have a problem that might have caused us to go back to a previous version and that was resolved quickly with a support call.

The to do list contained rather a lot of potential show stopper items:

- The mooring locations of the Beagle were not easy to identify from Darwin's journals and anyway he was off the boat[2] for months at time. Also we really needed some locations in the Pacific (to get a wide range of great circle intersections) and the Beagle didn't stop that often.
- I wanted to use a fake automated switchboard to respond to callers to Acton Hospital. When I had this idea in the early part of the millennium I had an extra phone line that could be used and PCI boards and software to do the job. The line had gone and the software was now obsolete. So could we do something with email? It didn't seem likely, we would have to respond to possibly tens of thousands of emails a day.
- We couldn't draw the great circles accurately because we didn't have a precise location for the treasure. It was looking more and more improbable that I could construct a fake tree that would pass inspection and not be disturbed by the general public[3].
- We had no art work. I could not decide what to commission. Worse, one of my artists turned out not to be an artist at all. The water colour she had shown me some years ago was her only art work ever and she was not doing anymore!
- My idea of using TV remotes was completely untested. I hadn't even built the kit! Would it work outdoors. Would it work at all? Would sunlight mess it up? How close would ATHers need to be? Could I really build a fake tree with an IR sensor? Would a 9V battery last for the 5-6 weeks of an ATH?
- Apart from the pinhole code and a simple 25 letter code based around the "no Y" concept it was all looking a bit thin in the puzzle solving area.

May 1st Progress Review

- I had built the kit to detect TV remotes and visited the Wood again to see if there was a reasonable alternative to my fake tree idea. There was an area with a few bird boxes, another one would probably go unnoticed by the general public, and if I used a wireless front door bell I would not need to run a wire to the buried treasure which could contain the front door bell. So I bought the one with the loudest sound and longest wireless range on the market. One of the sounds was the saxophone and I determined this was the loudest and carried furthest. It was fortuitous that I saw the saxophone fingering chart at the back of a book in a charity shop a few weeks later. I bought a few relays and a timer circuit form China and jury rigged everything together and amazingly it worked. It worked with all the remotes in our house and at 25m+ outdoors (the chip specification was 45m).
- Simon had been looking into the voyage of the Beagle using Fitzroy and Darwin sources and had collated them into a large spreadsheet where we could see where it

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[2] A fact not noted by several teams who had the Beagle mooring on day 1,225 at Illapel, 1,000' up in the Andes.
[3] It subsequently turned out that the Wood is used on a very regular basis by the adjacent school for some kind of cross country hunting event of their own – that is what all the red and white tape is for. I never worked out what they were searching for, it just seemed to involve about 60 kids running through the Wood screaming at the tops of their voices. It made discreet burial and maintenance of the treasure location problematic.

was moored[4] and for how long[5]. Simon took the treasure location I had now fixed on and drew 24 great circles using Anthony's upgraded Excel tool. All these circles fitted the bill of a Beagle mooring of several days and passing through the treasure location. Simon then set about trying to find a common theme on these circles and this is when the railway stations emerged.

So two show stoppers down, we had another good project lunch and set a date for the next.

May 29th, another lunch/review.

- A fine set of stamps that showed the evolution of navigation devices was deemed to helpful.

- We decided to go down the Rickrolling route for red herrings but stopped short of the trapped version whereby the only way out of your browser once the video starts playing is to close the browser. A mixture of technical and potential ATHer anger issues at play here. www.ATHCorp.co.uk was up and running at this stage. Although we took it down shortly after for fear of a knock on the door from the Puzzle Palace people.

- We hadn't made any real progress on the showstoppers but we had added more to the to do list:

  1. We needed an automated email responder if we were going to cope with more than 10,000 emails a day and this seemed likely if teams used a brute force attack. I had no idea how to do this other than with automated email client rules and it looked very likely that we would run into ISP restrictions that were mainly intended to stop spam. Anthony agreed to start looking into using Google Application Engine to do the work.

  2. We needed a real phone number for Acton Hospital to direct ATHers to the email responder.

  3. The navigation devices on each page were to be an alternative way of finding the railway stations but I could not see how to do it. Simon agreed to look into it.

  4. We needed a sound file of the journey to the treasure burial site.

  5. I had taken a ladder to the wood and measured up the bird boxes and bought the same size. It needed to be put in the garden for a few months to weather.

  6. We didn't really have a handle on the questions; we had enough trouble with the rest of it. Time to expand the team.

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[4] Not all these sources were accurate and one of the Darwin sites corrected its entry after our advice.
[5] If it's any consolation to those teams who identified Beagle locations that were inland, we had a few at this stage but the checking identified them and also threw up crossing the dateline and its impact on the number of days for the voyage.

7. It was about time we commissioned the artist.

July 29th, another lunch/review.

- The brand new Bird Box is up a tree in the garden, possibly too late and the wrong time of year to get the weathering needed for Christmas.
- We agree with Anthony that we should use QR codes and he starts research.
- Sudokus look useful. Simon has written software to solve a Sudoku and use the solution to encrypt and decrypt messages.
- The artist, Josephine, has delivered her commission for the front page and it looks great. We agree to ask for more art work.
- Simon has produced a near final set of stations, navigation devices and clues.
- We decide to get a Skype number for Acton Hospital since we have some control over the allocated number and can make it thematic.
- Simon produces software to sum alphabetic strings module 25 (no Y).
- Another potential show stopper:
  We run into a 100 email a day limit with Google Application Engine, we need more than 10,000. We may be able to up the limit to 20,100 by paying a trivial amount of money to Google and writing a carefully worded email request – however no response from Google two weeks later.

September 2nd, another lunch/review.

- Google have granted us the higher email sending limit and the email responder is largely complete. Volume testing and performance tuning are going well and it looks like the cost to run this software on the Google infrastructure will be zero, even if we get 20,100 emails a day. So a show stopper is killed off at last!
- We try to make station images harder to find with Google Image Search. Rotation, mirroring, cropping and tinting but it is very stubborn. So we settle for harder but not impossible.
- Major mock-up of skeleton ATH created with cover page, dummy questions, sound files, station pictures and ATH Corp logo. We are so not ready but we are beginning to understand production of large multimedia pdf files. Still only proof of concept.
- Bob suggests some readily recognisable instrumental music intros, I add a doctored version of The Rose to make it a little more interesting (since it defeats Shazam).
- Pete starts work on the questions.
- We decide on a hunt of 3.5 weeks. Hunts have been nearly 5 weeks in recent years but the team's consensus is that if you haven't solved it "*…after about 3-4 weeks you just want to be put out of your misery and be given the solution*."
- QR codes tested and no Y cipher mod 25 software developed.
- Question ideas are stacking up; we need to turn them into quality questions. Dave B deployed.
- Greeting message for Acton Hospital switchboard created and tested.

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- Poster ideas discussed.
- Dave tasked with making a recording of journey from Acton Hospital to treasure site

September activity

- Lots of research into the navigation clues and what area is indicated when you know some but not all of longitude, latitude, date, time Polaris/sun elevation, sunrise, sunset & noon. Is it really possible for ATHers to make sense of all this? Equation of Time, Haversine formulae are one route but it also seems possible to move a pointer around a map which should be within the reach of most teams. All navigation clues double checked. One of the clues is a magnetic bearing which we regard as the simplest of the navigation clues[6].
- Partial Hunt document is beginning to look like the real thing, saxophone code now included and size is becoming an issue for our group sharing software.
- First draft of Poster using latest from the artist, this is also rather large.
- Lots of testing that shrunken QR codes can be read successfully by different readers.
- Bird box electronics only a desktop collection of connected components. Decided to put all in a clear plastic box and put in the garden for a couple of weeks to see how they perform. The box is opposite a window behind our TV so that whenever the TV remote is operated the electronics are activated and the saxophone plays in the house. It is driving Jeanne mad. Reliability seems good except when the sun is out and then it sometimes refuses to turn off once activated.

October 30th review

- We have a beta version of the hunt! We could go live if we had to. There are still a lot of rough edges, not the least of which is the sound file which gives away too much location information and needs redaction or its equivalent.
- Pete starts review of beta version. Simon and Anthony review the circles, station locations and beagle locations and we seem to have some issues.
- Shireen asked to repeat her ATH publicity drive.
- Previous ATH archived.

November activity

- Dave to assemble Bird Box with electronics inside and test with treasure box buried in the ground. This turns out to have all the problems you would expect when converting a proof of concept to production running. It is discovered accidentally[7] that IR can penetrate where normal light cannot and so the IR sensor is hidden behind a plastic milk bottle base and this seems to resolve the sunlight issue.
- Nov 11th announced start date of hunt on PablosATH.com and there is still a lot to do.
- Pete's review falls foul of crossing the date line, a mistake we hope many teams will make.

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[6] Although clearly many teams have never used a compass.

[7] When the assembled Bird Box was packed ready to transport at the back of the television we noticed that it activated when the TV remote was used. This was surprising since the box was inside a rucksack inside a bag!

- We seem to have used a unique saxophone fingering chart. However, other charts are not that different and interpretation is relatively straightforward.
- Nov 14 stations and clues reworked
- Nov 24 Anthony redacts and truncates the sound file. As recorded it points too directly to the treasure location.
- Nov 27 final meeting and decide to go with what we have. Bird Box still not operational or tested with buried treasure box.

December activity

Dec 4 review. All ready to go bar coffin for treasure box. Final reviews are kicked off and it is decided to deploy the coffin at the treasure site and do whatever is necessary to make it work with the Bird Box and miss out the factory testing stage.

Dec 5 www.PablosATH.com updated ready for the hunt.

Dec 7. Coffin is deployed at the treasure site and is activated remotely from the Bird Box but the saxophone sound cannot be heard. Consider suggesting that ATHers take a Beagle with them. Perhaps a second speaker is needed to make the saxophone is audible above ground. Lid of coffin is removed and taken back to base for modification.

Dec 11. Final review comments processed into documents and production process started (removal of layers and identifying file names). Poster released.

Dec 12. Some feedback from the teams that they are having issues with the Poster. We decide that the Poster is fulfilling one objective which is to shake out the technology issues for the teams before the main event.

Dec 13. Lid of coffin is re-engineered to support an additional speaker. It may now be too large for the coffin so tools will need to be taken to potentially re-engineer the coffin.

The teams we are monitoring are making very short work of the Poster.

Dec 14. Re-engineered coffin lid (with attached treasure box) deployed successful at treasure site and working great. Some treasure box tickets badly printed as the printer ran out of ink.

Dec 16. Final review reveals that pin-hole code white dots now in wrong place as a result of replacing a question.

Final, final, final review and production process started for main documents.

The team keep telling me to "Keep calm"

Dec 17. I cannot resist adding the Edinburgh Fringe question to page 13 despite all the risks of unintended impact elsewhere in the hunt.

Dec 17. A review by the team suggests the mod 25 code is wrong and we need to rework the QR codes. After much investigation this turns out to be a false alarm. We are ready!

Dec 17 23:59 The Consultant's Letter is released

Dec 18 11:57 Deploy updates to PablosATH with Hunt and sound files

14:00 Place ATH Postcard in newsagent next to café

14:15 Visited café by Bury Lake with the intention of leaving an ATH Postcard on their noticeboard. They have taken down their noticeboard! I pin it to a nearby tree.

14:30 Visit treasure site to check OK and replace duff tickets with new ones.

AT LAST WE ARE LIVE