



Imagining Scientists

Intro

For more than 60 years researchers have explored stereotypes of scientists. During this time they have attempted to isolate the small number of essential, simplified criteria that represent a scientist. This work began in the 1950s when two cultural anthropologists, called Margaret Mead and Rhoda Métraux, drew on the perceptions of American high-school students to produce a composite image of a scientist. Their findings, published in the journal *Science*, described a stereotype that still features in some forms of popular culture.

Why does the 1950s stereotype of a scientist endure? How does this image relate to what 21st century scientists actually look like and do? And how do people, particularly young people, respond to images of scientists from popular culture?

In this feature Dr Richard Holliman reflects on the findings of a research project called *Invisible Witnesses* to explore these questions. In so doing he considers some of the implications of the 1950s stereotype for how scientists are perceived in the public sphere.

Rick Holliman (narrator)

Unhelpful stereotype number 42: the mad scientist.....

Kids' Vox Pop

When I think a scientist I think of like a mad scientist, an Einstein , big glasses and crazy hair...in a long white coat and goggles as well...maybe a moustache? Normally I think scientists are quite geeky scientists have to be quite clever – someone who studies hard and doesn't go out - just focused on doing work. Looks as though he's been blown up. Experiments a lot. Mid 50s to early 60s that sort of age . Bit of a loner maybe. Not many people see him. Mysterious man. He would work at a university maybe or in his lab on his own at home. Maybe in his own basement doing crazy experiments. I don't know why but I always imagine them to be men normally. It always is in cartoons, they're always guys that are the scientists.

Rick Holliman

Sound familiar?

These descriptions are from a group of young people aged between 16 and 18. They were asked to describe their idea of a stereotypical scientist.

For over 60 years researchers have explored these stereotypes, isolating the small number of essential, simplified criteria that represent the image of a scientist.

So where does this stereotype come from?

Does it reflect what 21st century scientists actually look like and do?

And how do people, particularly young people, respond to it?

Let's hear from an imaginary scientist from the 1950s

Spoof 1950s Scientist

Hello welcome to 1957.... Hello. Welcome to 1957. I am YOUR GRANDPARENT'S IDEA of a scientist. Come into the secret underground laboratory, why don't you?

Please mind the clutter...I'll just put on my white coat...Be careful of those test tubes – Oh and that lit wire Bunsen burner.....these little critters are some guinea pigs we are working on...

But the main research we've been doing in here is about ...ME. Because I am the culmination of the popular idea about the image of a scientist.

I am a middle aged male. You can tell that from my beard and my bald head. Please excuse my dishevelled appearance and stoop .(stretches and groans`) My back is sore from too many hours leaning over the lab bench...I spend my day doing experiments pouring chemicals from one test tube into another. Sometimes I take off my spectacles to look down a microscope or to scan the heavens through a telescope.
I have 'Eureka' moments and then I write things neatly in my black notebook.
I am intelligent, patient and open minded. But I am also overworked, undervalued and lonely.

Rick Holliman

This evocative description is derived from research conducted in America in the 1950s. So that explains the American accent. Two cultural anthropologists, called Margaret Mead and Rhoda Metraux, drew on the perceptions of American high-school students to produce this composite image of a 1950s scientist. So why does this image endure?

James Bruce

If you look at some of the films in the 50s and 60 there was a massive explosion in science and there was a real belief I think that science was going to sweep everything else before it and create the perfect world. And you see all these images of people in white coats telling you – and they are almost preaching at you – seemingly all knowing – but as we started to find out we're just as fallible as the next person.

Rick Holliman

Clearly then popular culture has a role in reproducing the stereotypical image of the 1950s scientist. Our research on children's television shows that this image is alive and kicking, at least in some genres.

Try some children's television if you doubt this.
Animated cartoons, game shows and comedy programmes are a good place to start.

So how do these images compare with how 21st century scientists see themselves and their colleagues?

Scientists vox pop

Let me assure you that most scientists are actually quite normal people. They do know how to dress. They look good at the weekend, they know how to go out and have a good time too. Scientists are just normal people who are a bit whacky./ We really are just passionate about what we do. The whole thing about rolling back the frontiers of science. They often seem quite driven because of the passion they have for the subject they're discovering. You go home at night and you can't switch off, you're always thinking about what's going on. It was and still is a way of life. You choose it not because you see it as a career but because it's something you really want to do .

Rick Holliman

So we have some idea of how 21st Century scientists see themselves.
And we can see the types of characteristics they value. But what do they actually do?

James Bruce and scientists

I'm James Booth , I'm a lecturer in chemistry. I'm interested in how molecules interact with each other. I'm interested in how they interact with light and applying that to the diagnosis and treatment of diseases such as cancer. I'm Karen Olssen Francis I'm a post doctoral research scientist. I look at microbial survival in extreme environments focusing on space. So I send microbes up onto the international space station and look at survivability. So people are quite

interested in what I do – it's looking at potentially life surviving in space. My name's Manish Patel and my area is planetary science and exploration of the solar system so looking at what happens on Mars , how we get to Mars. I was involved in the Beagle 2 mission where I had the opportunity to build an instrument as part of my Phd studies that actually flew on the mission to Mars. I'm Caro line Douglas and I work in the science faculty . My first degree was in geology – so lots of rocks and then I followed up with some research on Martian meteorites. My name is Corinne Rooney. Laboratory technician. Some of the work we do is about greenhouse gas release from natural environments and also from waste. We can create in the lab artificial environments that mimic the environments they are in out in the field.

Rick Holliman

These examples illustrate the research interests of the Open University scientists we interviewed for this feature. But they're everywhere.

What's more the SAME scientist could find him or herself in the Australian outback, in a high-tech lab, at a high profile conference, or strutting the streets of Whitehall to advise a government department.

Some scientists even appear on television. Which brings us back to where we started: Unhelpful stereotype number 42: the mad scientist
During our research we've found evidence that the 1950s stereotype endures.
So some challenges certainly remain. But it's not all doom and gloom. Far from it.
In our research we found that children and young people demonstrate sophisticated media literacy skills.
They differentiate between fact and fiction.
And they have the skills to deconstruct stereotypes.

Ben Potter

Hello my name's Ben , I'm 18 years old I've just finished my A levels and I'm hoping to study radio production at de Montfort University in September. Nowadays scientists can be anybody I suppose – any ethnicity, male or female, it really doesn't matter any more because there are so many branches of scientific research that they could be working in anything from shampooing mice to rocket science so it's very very wide ranging.

Rick Holliman

Perhaps we should raise our hats to Dr Martha Jones, a fictional character from the long-running sci-fi series Dr Who

Jess Carr

She's the sort of character you would aspire too because she's more independent and cooler. Having that sort of role on television is good because it does make people like me – even though I don't want to be a scientist – but people who might do at my age would more aspire to be that sort of character than the typical Einstein sort of character – that's sort of seen as boring now. Like loads of my friends are interested in doing science at uni rather than something that's thought of as womanly or feminine or something. So it doesn't really matter like genders and stuff and it means that more girls my age are interested in sciences.

Rick Holliman

So, female and male scientists are now being shown in TV dramas for primetime viewing.

They're appearing in other genres too, including those produced specifically for pre-school and school-age children and young people. These include news, natural history and educational programmes, but also animated cartoons, comedy and gameshows. It follows that different TYPES of scientists are now being represented on television, and at least some of them challenge the 1950s stereotype.

This is where systematic research of the types of images shown on television has a role to play, particularly when it's combined with a study of how children and young people make sense of these images. If we look across children's television, as colleagues and I did during the Invisible Witnesses project, what we see is a very mixed picture.

So for every TYPE, such as Lisa Simpson, there's the stereotype, think Professor John Frink. And for every Nina with her neurons for pre-schoolers, there's a Professor Muddles.

And for every authentic expedition to the Amazon rainforest, there's a gameshow based in an underground laboratory. So there is diverse imagery on children's television. The 1950s stereotype is now being mixed in with other images. The crucial thing is how children and young people interpret and respond to these images.

The important thing then is to ensure that both the female and male scientists that are shown are authentic, that they represent what it actually means to be a scientist in the 21st Century.

Our research suggests that children and young people, working with scientists and media producers, could make important contributions to this process, in particular to the development of scientist characters for children's television.