

Understanding Intellectual Ownership

This document will provide you with starting points for discussion with students regarding:

- What a concept like intellectual ownership is composed of.
- The ways in which ownership claims influence their world.
- The positive and negative consequences that can follow from having a strong sense of ownership over ideas/techniques/technologies etc.

When we come to legal claims at the end, we largely focus on IP protections that are not to do with copyright, as the issues directly related to copyright have been addressed comprehensively for A-level students (and the wider public) in *Contemporary Media Regulation: A Case Study in Copyright Law*, authored by Hayleigh Boshier and Dinusha Mendis (2015). This case study and a vast amount of other high quality and valuable material for students and teachers can be found at copyrightuser.org which is highly recommended (we at Cultivating Innovation had nothing to do with this work!) Focussing on IP protections aside from copyright also helps to draw out different kinds of points regarding how students understand science, technology, and invention and which do not emphasise the potential for infringement. For students who are already keenly interested in science, our aim is to give them the opportunity to begin thinking of themselves as ‘citizen scientists’, having to understand science and technology as actual parts of the world that one day they may have responsibility for. For those students who are merely interested in science and tech, these discussions help to embed science directly into the things they may care more deeply about, whether this is how political and economic systems should work, what counts as ethical and fair in a just society, and the question of what kinds of problems scientists and politicians should be trying to solve.

We focus on the three components of intellectual ownership, when it is understood broadly rather than narrowly:

- **PRIORITY CLAIMS**
- **PRODUCTIVITY CLAIMS**
- **LEGAL CLAIMS**

These prompts have been designed to complement and expand discussion beyond the pamphlet ‘**INTELLECTUAL OWNERSHIP: UNDERSTANDING THE WORK OF IDEAS**’ which is also available on the Resources page of the cultivatinginnovation.org website.

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PRIORITY CLAIMS

Perhaps the most essential and obvious feature that turns an idea or an invention into something someone can assert intellectual ownership over, is that it originated with them. To be more specific we should say “it is believed to have” or “it is agreed to have” originated with the person or organisation in question, as we can never know with 100% certainty where an idea was really first produced (though in the majority of cases there will be little reason for doubt).

Priority claims matter for a range of different reasons, and they have a number of different effects on the world:

Social status: Being recognised as the originator of new ideas, whether as an author or artist, or working as a scientist, technician, historian and so on, carries a certain amount of status. This status can have a snowball effect, increasing the opportunities available to such people in the future. Being recognised as ‘the first’ to do or think something therefore acts as a good incentive and reward for innovators (even those who claim they are only working for the good of mankind).

History: One key principle on which much of history gets written, and which shapes how people come to understand the world they are living in today, is through a succession of ‘firsts’. These get listed in chronological order, paying due respect to the innovators in question - from Plato to Craig Venter. Such a view of history is very easily shown to be misleading, and that focussing on ‘firsts’ or ‘THE original thinker’ misses most of the historical surroundings that actually made their success a success. Nevertheless, priority claims are intimately bound up with how we understand history. This links with social status, as we often think of inventors and artists as having ‘earned their place in history’.

Ethics: When making a priority claim, we are usually also making an ethical claim at the same time, along the lines of “I was first, and it is only fair that I get rewarded”. In many cases this ethical dimension will seem very clear cut. But what about if you were working with a team of people, and in the last couple of days you raced ahead to finish the thing by yourself? Sure, *you got their first*, but the ethical claim looks more dubious. Or what if your idea is potentially life-saving, but in order to protect your priority claim, you decide not to tell people about your new idea/technology until you can be in a good position to exploit it fully (perhaps saving enough money to be able to bring it to market). This kind of thing is believed to happen very commonly within the pharmaceutical industry. Here the ethical value of the priority claim looks much less obvious.

We would like your students to understand the sense of ownership that comes from having priority over an idea (perhaps by thinking of things they have themselves created, and how they would feel about someone else getting the credit for them), and then we would like them to analyse this feeling, and question how good it is to have a strong sense of ownership over such work. The following real life case studies, from the worlds of entertainment and science, should help.

Case study 1: Jokes – watch the video clip of the comedian Stewart Lee discussing Joe Pasquale, who he accuses of gross joke theft: <https://www.youtube.com/watch?v=0YE9Kthyaco>

What do you think? If a joke is good does it matter who thought of it first?

Case study 2: Electric cars – Elon Musk, CEO of SpaceX and one of the founders of PayPal, made headline news in 2014 by announcing that another company for which he is CEO – Tesla Motors – was no longer going to defend its patent rights on the innovations it had made in electric car battery design and manufacture. You can read the blog post in which Elon announces this himself here:

http://www.teslamotors.com/en_GB/blog/all-our-patent-are-belong-you

Is Elon Musk giving up his priority claim by giving up patents? How do priority claims work in this context?

What if rather than private individual people or companies, it was groups or teams that had created these particular jokes/electric cars? In such a system, would priority claims matter anymore, or would something else be considered more important?

PRODUCTIVITY CLAIMS

Productivity claims are not usually understood on their own terms, and in fact they are often taken for granted. At their simplest, a productivity claim is made when someone claims they have a new method, or idea, for achieving some goal, in a way that is *better* than any other previous method etc. An example would be a phone manufacturer boasting that their new screen has a clearer picture than any other existing phone. You can immediately see why productivity claims might usually have been taken for granted within discussions of intellectual ownership, after all, boasting about ‘the new’ is typically also boasting about ‘the better’. However it is important to recognise productivity claims on their own terms. Once we have identified them for you, we hope you and your students will begin to be able to see them working everywhere, influencing local and global decisions.

The majority of productivity claims will be of the straightforward kind discussed above, but they can also be much more interesting, relating to whole parts of the natural and social world. A simple example of this can be found with yourself as a professional. When people specialise in teaching (or any professional area for that matter), we also expect them to take ownership over that subject, precisely because we think they are *better* at teaching/doing it than anybody else. You do not tend to find maths teachers telling history teachers how to teach history, not because they aren’t necessarily better teachers, but because it is not ‘their domain’. These domains only exist because people think of themselves as taking ownership over their subject – this is their intellectual property. Researchers working at the cutting-edge of their subjects can even re-make the world, pulling the rug out from under everyone else. This is achieved by making a strong and broad productivity claim, one capable of extending beyond any other rival productivity claims, allowing the researchers in question to take ownership over whole domains that had otherwise been shared by numerous kinds of people. We give you an example in the following case study from the history of genetics.

Case study: Plant breeding and the rise of genetics – People have been attending to the selection and breeding of plants for centuries. Farmers have been amongst the most attentive, but there have also always been others (either in business, independently wealthy, intellectually curious, or some combination of all three) who have taken an interest in how plants can be made more productive. Today however, there is really only one group of people that we expect to increase agricultural productivity – geneticists. How did geneticists come to occupy this privileged position?

The earliest geneticists made a number of *grand productivity claims* based on their science. Rowland Biffen would be the best example, and you can find a lot about his research and the importance of his work for genetics – including lecture videos – online. Such geneticists could admit that earlier breeders had had some success in increasing agricultural productivity. However it was only Biffen and other people working in the new science of genetics who could actually *explain* these increases in productivity. Only geneticists knew about genes, and the rival productivity claims of farmers etc. could be swept away. It was not simply the case that people like Biffen were saying “Look, I have a new plant variety that is better because I paid attention to its genes” (though they did also say this about their new varieties, the most famous example of which was a wheat called Yeoman). Rather they claimed that all potential increases in productivity could be explained by, and depended on, genetics. Such productivity claims meant that plant breeding (and animal breeding, and human health – i.e. anything with genes in) could be claimed to be owned by genetics and geneticists.

What would happen in the future if a small group of scientists found that, instead of genes, it was things called ‘fenes’ that actually determined how productive plants were, or how healthy humans were? Try to imagine how radical this change would be, and all the changes in people’s jobs, and the way we talk, and even the law, that would have to happen. This is a good way to understand how radical the rise of genetics was, how much of the world became owned by genetics, thanks to their *productivity claims*.

LEGAL CLAIMS

Patents, trademarks, copyright (amongst others), these are legal claims because they are written into laws and conventions. These are the kinds of claim that people tend to jump to when they think of intellectual property, which - as we have seen - is only one part of how ideas are owned. By first showing intellectual ownership in its broadest terms, we hope we have set things up for you and your students to appreciate that patents etc. are tools that can be adopted (or not) for different tactical reasons, and that like any other tool will only have certain effects and limitations.

Copyright: applies to original writing and artworks, including drawings, music, photographs and films. You don't have to 'apply' for copyright, you are automatically the copyright holder. In some countries, like the U.S., you might still have to have registered your work to seek damages against an infringer.

Trademark: if an individual or a company wants to protect their name, or brand, they apply for a trademark. This means that others working in the same kind of trade, cannot use the same branding etc.

Patent: you would apply for a patent on a new machine you have designed, or a new technique for making things, provided you can demonstrate it would not be obvious to anyone else to have created it based on what everyone else already knows. Sections of DNA can also be patented, though in an important recent decision the US Supreme Court reversed its position on this issue. See Case Study 1.

Legal claims are sought for a number of reasons.

- As a way to protect your monopoly over an idea/invention i.e. to stop other people from being able to use it without your permission. Legal claims typically provide a legal mechanism for prosecuting or penalising those who infringe upon your intellectual property.
- As a way to look like a serious person/organisation. For instance, scientists and companies today are often judged on how many patents they have. This is particularly important in industry where patent numbers are seen as a sign of success.
- To make money. In the majority of cases a legal claim does not really stop other people/organisations from using your invention, but rather establishes the fact that those looking to make use of your intellectual property have to negotiate a price with you for access to it.
- To stop other people patenting it! This might sound strange, but it is precisely this kind of motivation that makes it so important you appreciate that legal claims are tools. (Look at Case Study 2). The essential point is that there are people/organisations that are more or less aggressive in their efforts to secure legal claims. To prevent such people/organisations running rampant through an area, others will pursue their own legal claims, as a way to block the aggressor (thus making room for people to work on an area without worrying about infringing legal IP claims).

Case study 1: The BRCA1 gene – the existence of this gene within a person's DNA has been shown to matter greatly for the development of certain cancers, particularly breast cancer. Until very recently BRCA1 was the legal intellectual property of one company in the US, Myriad Genetics, who used its patent on BRCA1 to establish a monopoly over testing for this gene. This made them a lot of money.

What do you think might make it acceptable for someone to patent part of a sequence of human DNA? (i.e. what makes a legal claim OK?) What do you think about this use of patenting?

On the recent change: www.theguardian.com/law/2013/jun/13/supreme-court-genes-patent-dna

Case study 2: BioBricks – some scientists attempt to find ways of doing their science that (while still making use of a system of legal claims) make access to their ideas and techniques cheap or free. The BioBricks Foundation is a good example of this. People working in synthetic biology are encouraged to place their genetic sequences under a legal Public Agreement, which then allows other members of the Agreement to access this information freely (provided they too agree not to assert an exclusive legal IP claim over this sequence in the future.)

See: <https://biobricks.org/bpa/>

What roles can you see priority and productivity claims playing under such a system?

HOW, PRIORITY, PRODUCTIVITY, AND LEGAL CLAIMS INTERACT

PRODUCTIVITY CLAIMS

Productivity claims are often essential for successfully receiving **legal** protections for an idea, particularly in patenting, when one must give a highly specific description of the function and ways in which the idea/invention works. A helpful way to differentiate your idea from someone else's is to explain why yours is better.

Legal claims are often taken as evidence that someone's **productivity claim** must be pretty good. People often assume that an idea that has been patented is more likely to deliver on its productivity promises, than an idea/invention that has not been patented.

One of the reasons that arguments over **priority claims** (which happen when two or more people claim to be the first), can come to matter so much is precisely because the ideas in question are thought to be **productive** (and thus particularly valuable). And in return...

Productivity claims, once widely advertised and recognised, can come to make 'who was the first to do this amazing thing?' a much more important question. If people do not make and defend strong productivity claims, then who has **priority** is not particularly valuable. Productivity and priority are often intimately related.

LEGAL CLAIMS

PRIORITY CLAIMS

When putting together the evidence to make a **legal claim** over an idea/invention, proof of **priority** is often essential for defending your claim against someone else's. Here **priority** can have a cumulative effect if someone is already closely associated with a range of different existing ideas/inventions that are closely associated with the new one, that some new legal protection is sought for (even if earlier **priority** claims were not made into **legal claims**). And in return...

Winning a **priority** claim/dispute in public, and getting general agreement from people in society that YOU were the real first, can be an excellent way of smoothing the way to successfully pursuing a **legal claim**.

All of the ideas and arguments in these discussion prompts and associated pamphlet are based on research published by Professor Christine MacLeod and Professor Gregory Radick: 'Claiming Ownership in the technosciences: Patents, priority and productivity', *Studies in History and Philosophy of Science*, 44 (2013), 188-201.

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