CREATIVE INTELLIGENCE
WITH JAMES INGRAM

EPISODE 15: CREATIVE INTELLIGENCE, UNDERSTANDING TERRORIST CONTENT AND FREEDOM OF EXPRESSION
WITH GUEST ADAM HADLEY
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James: Hello and welcome to the Creative Intelligence Podcast, with me, James Ingram, host and CEO of Splashlight. This is a series of conversations exploring tools and technologies that fuel creativity and inspiration.

James: Today I'm in London, and joined by Adam Hadley, director of the Tech Against Terrorism Project. This was launched in 2016, and the project was initiated by the UN Counter Terrorism Directorate and works to support platforms such as Facebook, Twitter, and Google. Adam leads a team of specialists who develop tools and guidelines which help the global technology industry tackle terrorist exploitation of the internet. Adam's also the CEO of London-based data science consultancy, QuantSpark. He leads teams of data scientists and developers, which derive insight from big data, and develop analytical tools to solve strategic problems for government and private sector clients. Welcome, it's good to have you here.

Adam: Thanks very much for inviting me on.

James: Good to have you. What I love is this diversity. It's interesting how you're out there helping us, keeping us safe, and looking at ways that data's doing that, and then also, from a commercial point of view, you've got something going there, and we're going to dig into that, too. But what's kind of led you into this background of computer science, using against counter terrorism, and what got you into that field?

Adam: Well, entirely by accident. So my background is a combination of strategy consulting, data science, and also studies, Middle Eastern studies, Arabic, and so on. So if you like, the work we do at Tech Against Terrorism, and also at QuantSpark, is a function of that interdisciplinary background that I have. Certainly where data analytics is concerned, it's always important to focus on the end result. It has to be placed in context, and often that's quite a creative process. So it's great to be here today to talk about the creative elements of data, and how to ensure that insights from data can be fully embedded in decision making.

James: Yes, because there's the pure facts that data can generate, and then there's this intuitive side, right, more on the profiling and human science aspect of what you guys are trying to do. And I'd love to dig into that. I think it's really where creativity and... and there's creativity in everything, it's not just because you can paint, or because you can draw a beautiful picture. It's really putting things together and creativity comes from a lot of different inspirations. So how are you seeing what you guys are doing in data and in human science, or the profiling of people, are you looking at that type of science?

Adam: For the most part we try and focus on important decisions that organizations have to make, and that is about human science. That's about understanding people, and how they are looking to influence decisions in their organizations. Often our clients try and focus on the data too early, without having done the thinking, critical thinking in advance, of what it is they're hoping to achieve, what levers they can pull to do that, and therefore what specific questions can be answered through the analysis of data. And that's an important thing to stress with all of this. In data analytics, in machine learning, there are some fantastic technologies out there, but actually it's much more important to focus on the creative elements of decision making right up front. Because otherwise these technologies are kind of useless and very difficult to deploy in a way that has value.

James: Yes. Is there a for instance? What do you mean when you say the creativity in decision making?

Adam: So in that sense I think creativity is often about seeing what's already there, and rebuilding things in a different way.

James: Correct, 100%.

Adam: And if it's underway, it's not reinventing things, it's actually trying to rethink what's already there. And with that definition of creativity, I'm not sure that the Oxford English Dictionary would agree with that.

James: It doesn't matter, it's whatever you think it is.

Adam: That also applies to various technologies that can be put in place, and it's all about figuring out cool ways to get everything working together, so that the desired outcome is met.

James: So now you have this kind of thinking, and how is that deployed in a counter-terrorism way? Is it you're trying to project what they might be doing, or how they might get misused, the capabilities, or what does that mean, using data science in counter-terrorism for those types of companies?

Adam: So Tech Against Terrorism, our mission is to support the global tech sector in tackling terrorist use of the internet world whilst respecting human rights. So we're kind of cognizant of the fact that terrorism and counter-terrorism is a complex policy area, because of all the obvious reasons of definition and so on

and so forth. Where we start from is thinking through what terrorists want to achieve, and that's often strategic political effects. It's also in radicalizing individuals, and terrorists and violent extremists use all manner of technologies to achieve their objectives. Some of that is around content production, dissemination, and propagation. That tends to be where we focus, that's not just what we look at, but we start out thinking strategically about what is it that needs to be done about terrorist use of the internet. And we work with the UN, we work with governments, we work with tech companies of all sizes. And we do three things, the first thing is we try and reach out to some of the smaller platforms that are increasingly used by terrorists.

James: Because they're a little less monitored, or heavily monitored, or...?

Adam: Yes, yes. I mean, the internet is a system. So if you start affecting activity in one part, on one part of the internet, in particular on the larger platforms, terrorists and violent extremists respond accordingly in a kind of rational sense. So they often use the larger platforms as channels with large audiences, and that kind of explains why historically they've tried to kind of dominate those platforms, but things have changed a lot recently.

James: Sure.

Adam: Facebook hiring tens of thousands of content moderators. And for sure there's still activity on the larger platforms as you'd expect, given the billions of users on there.

James: The reach is profound, so, yes.

Adam: Well yes, it's mind boggling isn't it, in many ways. But what we've seen over the past couple of years in particular is that all of this activity has moved to smaller platforms that aren't necessarily generating any revenue, a normal person may not have heard of them, essentially it's a fragmentation. So there's this kind of systematic response to content takedown on the larger platforms. So the first thing we do is we try and figure out what are these platforms being used by terrorists and violent extremists?

James: Right.

Adam: We then try and build up a relationship with those companies. Although it's a bit of a misnomer calling them companies, because they're not making any money from it, so pet projects, an academic or something. And then we work with those platforms to help them figure out the policies, so should they be taking content down or not? What are the ethical implications of that? Are there other ways?

James: Privacy, freedom of speech.

Adam: Precisely, yes. So these are really serious concerns, especially in the broader context, there being very little agreement between nation states about what

should be done. So first and foremost, we try and figure out where is this activity that needs to be addressed in some way? How should platforms be doing that in a way that is respectful of human rights and freedom of expression? And only once all of that has been done, do we then start thinking about technical solutions that can be used to identify terrorist content. And in particular, we recommend that platforms focus on the most obvious forms of content first. It's a bit of a platitude, but saying that 'the perfect is the enemy of the good' is true in this area, as well as many others. So then we work with small platforms, and the bigger platforms, to advise them on what type of content is most egregious, it's usually the violent type of stuff. Or material that has branded...

James: Hate and things.

Adam: Yes, yes, stuff that's got low blows at designated groups, that's where we try to start first. So if you like, it's not just about the technical solution, that has to be placed in context, and that comes right at the end of a process of building trust and confidence with platforms, really explaining fully the nuance and complexity of such a thing, and it's only once that's been achieved can we then get down to the data.

James: Or they're maybe helping them have tech that's sentiment analysis and things that are looking ahead, the machines are helping to identify streams that are coming in, or words that are coming in, is that what the next step is after you've got their kind of alignment that we should be paying attention?

Adam: Yes, exactly. So then it's thinking through how to perhaps use design thinking to establish what are their biggest needs that can make their lives a bit easier in terms of managing this risk on those platforms. So we might firstly start out with helping them translate content better, so they can make better decisions. Or it might be showing them designation lists that the UN, or the US, or the EU have developed. And then subsequent to that, we'll think through how we may be able to work with them to build classifies that can be used to automatically detect the ISIS logo, or a far-right violent extremist organisation logo. But that is right at the end, and the same applies for commercial data analytics. I always say that machine learning is the last 10%.

James: I see.

Adam: And that's sometimes quite hard to communicate.

James: Yes.

Adam: Because people seem to think that machine learning can solve all of it. Actually, it's largely about thinking through the problem analytically in the first place. So that then technology and data analytics can come in and solve very specific problems when it's placed in a coherent framework.

James: Right. Yes, it's really replicating the way the mind would work. If I'm that one individual and I'm going to look through my one set of data, how I might go through that and get good... then you can begin to train the algorithms and machine learning, right? It really has to follow human process.

Adam: It does, yes.

James: Yes.

Adam: And if you try and skip that process, you end up with an algorithm that doesn't make sense, that isn't explainable, and isn't particularly useful.

James: Yes.

Adam: And I think that's sometimes forgotten when people are talking about the application of artificial intelligence and machine learning, it's not really about the outcome, it's about the process.

James: Yes.

Adam: And therefore it's about understanding the real decision making that human beings go through.

James: Right.

Adam: And what political buy in-

James: Right.

Adam: You need from an organization to achieve that. That's most of it.

James: That's that creativity you were talking about.

Adam: Exactly.

James: Yes, how the creativity of the mind works, both those who may be trying to exploit the system, and those that are trying to create ways to monitor when it's being exploited. That's really, really cool. So are you finding that your work you're doing in that field is affecting the work that you're doing in the commercial world?

Adam: So a lot of the work we do with regards to terrorist content is around the identification of logos, and names of designated terrorists. So if you like, that's quite a specific use case. And in many ways, machine learning, deep learning, is really effective at highly unstructured problems like that. You know, identifying a picture of a cat, for example, is a great use case for machine learning. And the same with logos, and so on and so forth. What's much harder though is to establish use cases of machine learning with regards to pure numerical datasets, which is clearly the bread and butter of business decision making. So there isn't

much overlap there. However, in structuring the problem there's a lot of similarities. And what we often say is that we try and kind of front load the innovation, so we always work with our clients extensively to figure out what are the problems that need solving and how can we create a solution that meets those demands? And only after that has been established do we think through the detail. So on the commercial side of what we do at QuantSpark, that's largely focused on supporting large retailers, insurance companies and so on, process very large amounts of data and parametrize it. So a lot of the time, this is more about helping businesses have a better understanding of the data they already have. So that might be in identifying metrics to help a human being understand behavior. An example of that could be in churn prediction. So a big problem in businesses, especially those software as a service business, they want to figure out who's going to leave their service. And they might only have a couple of people on the sales and marketing team to call up, or to send an email or make an intervention. So it's there because of the limited resources that companies have, they clearly want to prioritize and triage...

James: Those that are not using, might be leaving.

Adam: Exactly, it's kind of a classic problem.

James: Right.

Adam: Right, and sales teams have been wrestling with this for a long time. So the sort of thing we do in that context is grab as much of the internal data as we can, transaction data, historical data pertaining to that individual, and then we try to parametrize various features, so characteristics of that relationship that the individual has. And again, this is not a misunderstanding, a lot of the time when we think about open source intelligence, or improved data analytics, it's very easy to think of additional data sources. So you may want to find information about the demographic of the customer. We often find that that's actually not particularly analytically useful.

Adam: There's a lot that can be gained from really thinking through what you already have.

James: And having to structure it, having to weight it...

Adam: Exactly and that's really difficult because you need talented analysts who are excellent at critical reasoning and that's in real short supply.

James: Yes, how you treat the data, the metadata, I guess.

Adam: There's pressure to skip that, right?

James: Saying, "I have all the data, so just let an algorithm run on it."

Adam: Exactly, exactly, and often you don't need to go that far, sometimes you don't need to build an algorithm, right? You just apply some common sense to a large data set.

Adam: That's a difficult sell though, actually because everyone wants, "Oh, you're using machine learning." Well, not really, because actually you could get there in a couple of days by just using the Pareto principle, 80, 20 rule, actually is much more effective in many cases. And also, in terms of kind of sociology of decision making, it's important to ensure that the solutions we are proposing are easily understood by the client, and there's a question there about maturity about data, and a lot of companies and government departments or whatever, they've read about AI machine learning and a lot of that is focused on problems that can't be solved very easily using ML.

James: So there's two really cool things that are coming out of our conversation, two interesting streams I want to make sure we get to. You've got one stream where we're noticing and we're talking about how the internet and technology is fundamentally changing our world, and science, and who's equipped and who should be equipped to help study the impact that's happening. And that's why these tech businesses needs this kind of guidance, because the inventions are altering how humanity runs. The second interesting thing that we want to unpack that we're talking about is the accessibility to AI getting to the commercial world and getting mentally ready to understand how to even use that technology to further the business, right? Those are two very interesting things you're bringing up. So, I don't know, we can start with either one, but I'd love to unpack... I know the listeners, you can see the groups of people that are listening to this podcast. These two tenets are going to be kind of interesting to them. So, unpack away. Whichever one you want to jump into because they're two really cool ones, you know? How do we get our thinking ready to use AI in our businesses, and also tech is fundamentally changing society and what kind of branches of science is ready to study that, and who should be studying that?

Adam: Well, maybe I'll focus on your second question first.

James: Okay.

Adam: So in terms of tech changing society, I think, well that's always happened, since the invention of the printing press, but not at this scale.

James: Not at this scale.

Adam: And that presents a number of challenges, conceptually, that need to be considered. The first one there is, what information communication technologies really represent and that is a bit of an old-fashioned term these days, but I think it's important to kind of lump those things together, represents a flattening of knowledge structures. And this can apply as much to kind of white nationalist thinking, or far right thinking, as much as it can to ISIS.

James: It's new power, right? It really is new power.

Adam: Yes, taken to the extreme. It's kind of reductive, I'd have said, in that regard.

James: Can be positive like #MeToo or it can be negative like ISIS, you know you have these two...

Adam: Yes, it's fundamentally neutral, but is actually a disruptive structure in terms of epistemology and the theory of knowledge. ISIS, for example, say, when thinking through religious scripture, ignore your Imam, ignore your community, ignore your tradition, ignore the four schools of Islam. ISIS would say, as Jihadi Salafis, that individuals should ignore tradition in Islam and they should just go straight to various texts and cherry-picked verses and so on and so forth. And that's an example of a traditional knowledge broker being disintermediated and that causing a huge number of problems. We know that Islam is, as with most religions, is very important about to focus on interpretation, and place things in context. The internet and the advent of mass communication technologies kind of gets in the way of that and undermines that and it's the same...

James: It can more easily take things out of context.

Adam: Well, yes, and shouldn't just focus on ISIS, this applies to kind of far-right conspiracy theory thinking. There's a real challenge to traditional way of thinking about knowledge and that's neither good nor bad.

James: Yes, what field of science do you think should be really taking a lead and studying how that's changed society and how that's changing? And do you think we even have the tools to study it?

Adam: I mean, I don't know how to answer that really. I mean, it's impossible. I think one of the challenges here is it's so interdisciplinary there aren't many people that are kind of linking these things up. But the third challenge I would say with regards to the influence of technology in society is around this disintermediation of knowledge. That actually anyone can say anything and you...

James: Fact check is very difficult.

Adam: It's fundamentally impossible, because of the structure of the way the internet is designed, and we can't really change that. We've got to adapt, and our policy makers have to recognize that. That's not to say that this is an intractable problem, but does require to grow creativity and recognizing the internet is a thing and people are using it.

James: It's a thing. It's a thing.

Adam: And we need to change our institutions accordingly. And that leads onto the second issue, which is around the nature of our legal system and the internet in particular. We know...

James: Which is another group of thinkers that had to be involved in studying what's going on here.

Adam: Well, yes. I mean here in the UK, there's a lot of talk about online harms and I suppose the criminalization of the online sphere and that's interesting in a number of senses. When we think about the Christchurch attack that happened in New Zealand a short while ago, we know that around 200-400 people viewed that Facebook live video while it was being live streamed. So not many people, but subsequent to that, that video was recorded, it went viral, it was picked up by mainstream media and smaller platforms and then hey presto, everyone had seen it before you'd know and before we could do anything about it. And in the 24 hours after that, we know that about one and a half million individuals tried to reupload a version of that video to the internet. One and a half million people tried to do this. So there were questions about, "Well, does that mean there are one and a half million criminals?"

James: Or are they just curious?

Adam: Yes, what is it, but what sanctions should be considered for those individuals, if any? We don't really know, but the point remains of the internet, all of sudden we potentially have billions of legal infractions being created and how is our legal system set up to deal with that. And instead of policy makers and politicians really dealing with this fundamental challenge to the way that our traditional legal system is run, there is to some extent, I think, a rather lazy abdication of responsibility to the tech sector. If we're saying there are potentially millions or billions of criminal acts by people, how are we going to respond to that? Because our legal system is just not set up to cope with that scale.

James: And there's a lot of precedent, right? Technology can be... cars. Car manufacturers, they're regulated. Their technology can't just get on the roads and do whatever it wants, there's heavy regulations to how it affects society and safety and health. So it would make sense, you can see that there's other technologies that while maybe when they got started didn't seem like they would have impact are clearly beginning to have impact, deep impact. And that there is a sensibility that the law might say, okay, just like car manufacturers have a responsibility to provide a safe car to drive, there might be regulations or laws that might be getting thought through of how other tech companies need to provide safe...

Adam: Particularly with driving, there's a responsibility on drivers to know the speed...

James: So there's both. Right. There's both.

Adam: Yes, there's a balance. And also, I mean, I think that's a good analogy, but there is clearly some differences as well with regards to kind of... It's pretty clear how to define a speed limit, although there might be differences between different countries, the speed limit is a known quantity.

James: Correct.

Adam: When we're talking about content, that's a bit different and that is fundamentally... Well, obviously there is some agreement about various groups, but it's about the fringes where problems start coming in, in terms of definitions.

Adam: So, yes, there are some similarities so actually regulation always takes time to come into place, and it is always a function of collaboration and partnership between the public and private sector, that always happens. However, this is a bit different where content is concerned.

James: It's interesting around content. I'd love to get your thoughts... you just sparked a thought that had been told to me. So you have well precedent, right? If I own a newspaper, and depending on what I publish, I can be held liable. While there's freedom of the press, if I publish knowing I'm publishing something, there's regulations, right? There could be possible repercussions, largely because I sell for advertising, so it's a commercial vehicle now. I create content, I sell advertising at that content. And then you have these other groups, like a Facebook or a Google, that may be making money on allowing content to be published and so is it not that they're making money on this content and advertising, that they begin to mirror the same regulations that a newspaper might be under. That they need to fact check. That they can't just publish whatever they publish, or allow to be published. Do you see something growing, a similarity between those two things?

Adam: Well, I'd like to unpack that a little bit, because when we're talking about social media and the internet, we're talking about user-generated content and so that's very different. There is quite obviously no traditional editorial control over that content itself. So that's a big difference. But with regards to regulation, here in the UK we don't have an officially recognized regulator, or self-regulator, of the press. The Independent Press Standards Organization here in the UK, is supported by the majority of the industry here, but it doesn't align with the Royal Charter. So it is not a legally recognized entity. So actually, despite assumptions otherwise, here in the UK, we do not have a press regulator that these are legally sanctioned.

James: Right.

Adam: Right? And then that opens up lots of questions, so when we're talking about the Christchurch attack, one of the reasons we think that the video went viral so quickly was because it was picked up by a number of mainstream media outlets, especially here in the UK.

James: So that's user-generated content.

Adam: Well, they put it in an article actually, and I won't mention the newspaper here, but this particular newspaper published an article lambasting a tech company for this video, whilst embedding that video in its entirety in the article.

James: To promulgate it. Yes.

Adam: But of course, there's nothing that can be done about that, because there is no regulation of the press in this country. So, while regulation is clearly the important thing, it has to be thought through very carefully.

James: It does.

Adam: And it also needs to be applied consistently, and that isn't happening at present. And if terrorists and violent extremists are focused on trying to affect political change, mostly, it's of course about radicalization and the recruitment of individuals, but there are two separate things there. You know, why else would... most studies, psychological studies, of the way individuals receive content, show that the really violent terrorist content actually undermines recruitment efforts, for the most part, because most people don't really like that gore. And a lot of the most dangerous terrorists and violent extremists are not crazy, they are not necessarily... often, the core of these groups are intellectual people who really thought things through, we might not agree with them and a lot of their ideas might be pure evil, but they're certainly not stupid. So the really dangerous people...

James: Or just randomly coming up with this.

Adam: No, they're not. There's this idea that some of the most dangerous terrorists are completely insane. They're not. The fact is that many studies have been carried out to show that a disproportionate number of members of Al Qaeda have got PhDs in physics and engineering and mathematics, right? So that being stupid is not the cause of their violence. There are other things going on there that are obviously deplorable in many ways. So I think it's important to stress that, that this is much more complex than you first think.

James: Yes, that's why I think... bringing it back around to the topic of the branch of science. You can see that the branch of science in data science has found incredible value for themselves in looking at this data and finding incredible knowledge, right? And yet, we see the internet and technologies have disrupted the digital lives. We live different lives. And yet there's all these branches of science that are looking at it. We're thinking, and I'm thinking, there's a theory around digital anthropology and that anthropology has always led that charge to study humanity. That's their branch of science and that's what they focus on. And that if anthropology modernized into really digital anthropology, or a branch of it, kind of like they did for medical anthropology, that's the kind of thinkers that need to be paired up with these data scientists because they're trained in understanding those villages. You got data scientists finding the villages, finding these groups, and then you've got these digital anthropologists assisting in understanding their wider behavior. And that's something I'm curious what you think of that, if you've thought about that or ever heard that theory. But I think there's a reason for digital anthropology to take a bigger center stage in the world.

Adam: I couldn't agree more. It's all about finding opportunities to force people to work together from different disciplines. And another applies to the study of the internet and the designing of products that minimize potential risk, and it also applies to data analytics.

James: Which is really the only use right now at scale for digital anthropology, is designing a product. But I think, and there's only really a couple of universities that are creating PhDs in digital anthropology. But it's really, I think there's a great emphasis that needs to be made to get these disciplines, or these universities, coming together to improve that process and modernize it into the digital world, and ethnography and visual ethnography. There's a lot to be done here in this sector of science that could... imagine, pair it up with your efforts of which you guys are doing. Because it's an incredible branch of science to unpack this data like you're saying, how you go about it, how you think about it, how you get that data together and then pair it up with a branch of science to really analyze that behavior could be very helpful to leaders and thought leaders.

Adam: I couldn't agree more. It's all about placing this in context and understanding what the objective, what the strategy is, first and foremost, and then what kind of critical approaches can be applied to thinking it through. So in many senses, the very best data scientists are more about... they're more analysts.

James: Yes, they're analysts.

Adam: The more kind of break down a problem conceptually on a piece of paper. And I know that sounds kind of old school...

James: No. It's reality.

Adam: But it's true; the thinking is really important.

James: Yes, yes. The order of things changes everything. Now what about... Let's go back to the second tenet, because I think our listeners would be interested in your opinion about that. You're clearly one of the leaders in thinking this way. Getting a regular businessman or businesswoman, a business person, who now has to make use of AI to improve their business, or data science, improve their business. They have to think a certain way because it's not a press a button and solve all my problems. There's a lot to prep an organization and prep thinkers to use computational tools to change your business. What would be your guidance for those kinds of leaders? What mindset do they have to begin to have or go in with a reality when they start this process?

Adam: The first thing to stress is that there has to be a demonstrable, clear application of this. So there already has to be that framework in place in the business. So you need to really be thinking through, what is your commercial strategy, what metrics do you want to be working towards? That needs to be established first.

James: What does success look like. right?

Adam: Exactly. It's an obvious point, but a lot of people don't really do that particularly well.

James: Okay, so clearly understanding your outcome you're after.

Adam: So sometimes that may require some analysis to figure out in the first place. So it might be, I'm trying to grow the business. That could be about more sales, that could be about retaining customers. It's one of those two things really.

James: Yes, your markets or what...

Adam: Yes, whatever it happens to be. But that kind of understanding, which of those is more important. That's crucial. And the second bit is actually having the data infrastructure and architecture already in place. So a lot of what we might do with clients, we work a lot with private equity and their portfolio companies. We run through those two things. So one, what does success look like and how can that be quantified, conceptually speaking? And two, do you have the underlying data set to support those? Do you know how many customers you have? And the answer is often, "Not really." So a word that we discourage, in our team is the word 'surely', because this is only assumptions about what's in place and it doesn't really matter what the scale of the business or organization happens to be. Sometimes there's quite limited capability and that is fine, but sometimes I think business owners and leaders can be quite defensive about that. But it's important to focus on the basics first.

James: Because they can feel awkward if they don't know that answer.

Adam: Well, exactly. So sometimes where things often aren't as successful as they could be is when a business leader asks a data science consultancy to come in, expecting them to figure all of this out. And to a certain extent, strategy and data are intertwined. So what we sometimes do is kind of strategy by stealth, and sometimes that's helpful, and sometimes that's necessary. In a larger organization, if you want to affect let's say the decisions that are being made by a thousand people, actually the way to do that is to think about technological determinism, but in a positive way, is actually to build a model or a tool that can help guide those decision makers in whether they necessarily realize. That's a bit-

James: So they're kind of making it approachable.

Adam: Yes. Yes.

James: It's making it approachable.

Adam: And connecting it to something that actually has an impact.

James: Yes, rather than saying. "Well, that's all the quant's responsibility. I'm just the business guy, that's their job to find that aspect."

Adam: Well, that's the biggest problem. So the CPs knows two cultures divide, thinking that the data people or tech people are somehow different.

James: Right, "Do your job and tell me the answers."

Adam: Yes, yes, yes. I mean it's the same in let's say, theatres where you have all the actors and stagehands, typically, I mean this is a big generalization, but not always getting on.

James: Why not, we've made others!

Adam: Yes, yes. But I mean, it's trying to break that down and I think this is something that the very large consultancies struggle with because they think that it kind of often data and analytics is in support of everything else. And actually you've got to figure out a way of combining those two and actually creating a culture within your team where your engineers and your data scientists and your strategists are working together. You've got to figure out where fusing those things. And another issue is...

James: It's a good term, fusing. It's a good term. Fusing those things.

Adam: Well, it's crucial. Because it's only through fusing those skills and people with those experiences that you can generate creativity. Without that, you...

James: Plan out the problem that you're talking about.

Adam: Yes, so it's about trying to create that culture, which isn't necessarily easy and it flies in the face of increased specialization. Because specialization in terms of web development and software engineering and data science is a big issue because increasingly you need quite large teams to get even something fairly basic done.

James: Yes. And talking about that. So now when you move into, okay, you've got this large team and you fuse them together, but what about privacy? What about going after these consumer data? What's your belief on that, how accessible should our data be and our privacy? The more they know, there's a lot of sensitive data out there that could inform algorithms to be much smarter. But are you violating people's privacy to go and make your business better by exploiting this data?

Adam: So this is almost a philosophical question, because...

James: Yes, surely.

Adam: So for example, when talking about an end-to-end encrypted messaging app, there's a lot of pressure on a number of those messaging apps to decrypt messages and so on. Because there's this assumption that seeing the content of that message is vital. Now for evidential purposes it can be, but if you're trying to predict behavior you don't need that detail. And actually going back to what you

referenced the metadata earlier, you can build some really sophisticated models not knowing anything specific about that individual other than their anonymized behavioral pattern.

James: What group they might belong to.

Adam: Yes, yes. So then the question that arises is, what do we mean by privacy? Because it could be that an algorithm, it doesn't know who you are, it doesn't know your age, it doesn't know anything directly about you but can infer some pretty impressive things about you from your behavior. But does that impinge on your privacy? I don't really know because it doesn't necessarily know who you are. So a lot of the work we do commercially is we will anonymize an entire customer data set and we'll try to figure out, well what are the patterns of purchasing behavior? So if it's a shirt retailer, do we think this person is going to come back to buy another shirt in eight months based on other signals that we've detected from their purchasing pattern. We don't know anything about the person. We don't know who they are, no idea. But yet we're still able to predict with about 90% certainty then there is week that I'll come back to that retailer to buy a shirt. So is that an issue of privacy or not? I don't really know. It's not really because we don't know anything about that person at all, but yet because we're able to combine various signals and use a bit of machine learning to do that, we were able to build a kind of pretty accurate model.

James: So in that case, then the consumer can feel safe, right? You've not sold my data to somebody else?

Adam: Right.

James: As we saw with Facebook and Cambridge Analytica, you see once you now have moved that data out to somebody else, do you think businesses have the right to do that? I gave you my data so I can get services from you. And you've now taken my data, my efforts while I shop with you and you've moved that out to somebody else. What's your philosophical belief on that?

Adam: Well, I think personally identifiable information is never required, right.

James: Right. It should never go anywhere.

Adam: It should never go anywhere. It is never needed. It's not useful, there's no utility of analyzing that for any use case I've ever come across. The patterns of behavior are. And an example would be a... so we worked with a supermarket here in the UK and they wanted to identify stores that were affected by seasonal demands. And so what we did is that we normalized the sales over the year for those stores and we figured out when did sales drop off and when did it peak. And what we find, there are a number of stores, I'd say about a hundred stores, that had a peak in sales of alcohol about two times a year. And we looked into this and we found actually that correlated pretty well with student influenced stores.

James: A correlation there, yes.

Adam: And it just so happened that those stores were next to university accommodation blocks and this hadn't been picked up, but we were able to infer that from the spike in demand of certain products at a particular time of year. So it's all about trying to think more creatively about how you frame... We didn't actually know where their stores were. We knew nothing about those stores other than the trading pattern through the year, that was it.

James: And then you unpacked from there once you found a particular pattern.

Adam: So that's really powerful and necessary.

James: Yes, very powerful.

Adam: We often say it's important to fully exploit the data you already have and look for patterns in that before you look elsewhere to more exotic data sources.

James: It leads right to our question I wanted to make sure I asked you, is really how do you unlock creative decision making at QuantSpark and you kind of pointing it out right there, right? How do you unlock creative thinking? How are you helping them be more creative in their thinking?

Adam: Well, it's mainly about providing structure. I suppose there's this misunderstanding that creativity is about lack of structure. But you can argue some of the most creative people in the history of humanity are incredibly structured, Beethoven or Mozart or Picasso. These things just don't happen by accident. And you could say the creativity-

James: They prep, they practice, they have sketchbooks, they do their research. Yes, 100%.

Adam: There's a lot of practice and in many senses creativity emerges from constraints that are applied in the system. If that's not too weird a way of putting it.

James: No, the most will say that to you. They like to know where the edges of the canvas are. If I'm going to create, tell me the edges of the canvas. Tell me a bit more about my restriction on the medium and things get even more creative. Very interesting. Ah, this is great. I really appreciate this. Now if you were to send something out to the listeners that you really want them to be aware of, like something that you just really want to make sure people think about or is important to you for them to know, what might you tell us?

Adam: Wow, what a question! Yes, I guess the main message would be the word algorithm is problematic in lots of ways. So when thinking through how machines, how computers are helping with decision making, really that just about critical reasoning being applied to a complex problem and we can all do that. You can do that on a piece of paper. So there's nothing more to it than that really.

James: Right.

Adam: And machine learning is great at very specific questions that are being asked of complex datasets, but that's only useful if it's placed in the broader framework. So anyone with analytical skills can get involved with that.

James: I love that. So the power of preparation, preparing for what you want to do, get the right outcome, thought of it in front, then you get your data science. I love that. That's it, that's a great call out. It's very, very wise of you to say that. It's really been fun. We covered a lot of ground. A lot of philosophical things here and a lot of opinions and so it's always out for a stirring conversation. Thank you for being here.

Adam: Thank you very much.

James: So to find out more about this podcast, visit our website at creativeintelligence.fm and follow us on Twitter @_creative_intel. So you've been listening to the Creative Intelligence podcast. Thank you for joining me, James Ingram, and my guest, Adam Hadley, for what's been a really stimulating, informative and exciting conversation. Thank you very much.