S1E14 - Information as experience - Interview with Professor Andrew Dillon

Mark and Howard sit down with Prof. Andrew Dillon (UT Austin) to ask what information really is and why the answer starts with people, not machines. Andrew maps the triangle of data, people and technology and argues that information is an experience, not a spreadsheet.

A discussion of the lure of AI, why judgement still matters, and how we might regulate misinformation the way we regulate food; to nourish and not poison the public.

Shownotes, transcript and more available from https://thecollators.com

Links

https://sites.utexas.edu/adillon/

Transcript

Mark

Hello everyone, welcome back to the pod. We have a special episode of the Collators today. We have a very special guest. He is Andrew Dillon. He is a professor of information science at the School of Information at University of Texas, Austin. He conducts research on psychology and the impact of information representations, user experience design, and the augmentation effects of information in human activities. He is an award-winning academic and is a editor-in-chief of the Journal of Information and Culture.

a friend of mine and also I think one of the most important voices out there about information science. And you will hear me and Howard talk endlessly about information science. We thought it was about time we actually got an information scientist onto the pod and here he is. So welcome Andrew.

Andrew

Thanks very much for having me, Mark.

Mark
No worries at all. It's great to have you. So Andrew, just for our listeners, was wondering if you could maybe just give them a bit of your life story and how you got to where you are and what perhaps, but why you got into information science and yeah, just, to give a bit of a story so far.

Andrew
I suppose in some ways it's a bit of a happy accident. I came from a background in psychology. I

did a bachelor's in psychology and sociology at University College Cork in Ireland. And at the time of my graduation, we're going back now to the 80s, I was obsessed with the idea that while psychology was fascinating, all I had was a series of theoretical and model-based ideas of the human mind. And I wasn't sure that I actually really knew anything of practical import.

So I ended up falling into an area known as sort of human factors for graduate work and worked with a professor in Cork, Jurek Kierkowski, who's very influential in studying how do you measure people's satisfaction with technology. And that for me channels an obsession I had with how do I apply psychology in a way that makes a difference in the world, but isn't just talking about people's memories or talking about people's attention, et cetera.

So that focus led me, of course, into designing technology. I went to England to join Loughborough University, where I did a PhD and also worked in the research institute there, known as HUSAT, which stood for Human Sciences and Advanced Technology, which is a very influential group. They're no longer there, but it was a gathering, probably a fairly unique gathering at the time, of some 30 or 40 social scientists, backgrounds in psychology, sociology, management, ergonomics, concerned with exactly the problems I was wrestling with. How do we actually shape anything like technology or shape designs or shape work practices through the application of psychological principles?

And so that was a very sort of happy playground for me for seven years. So I was doing my PhD while I was working, very happy memories of times in Loughborough. Ended up, after I completed my PhD, doing a one-year postdoc in Indiana University. Again, a happy sort of coincidence in some ways that I saw a job in a call in a magazine which said that they were looking for a psychologist with a cognitive bent who could come and work with a team that was funded by the US Air Force called the Institute for Study of Human Capabilities, I think was its title.

And I thought, well, this sounds kind of interesting, not having a clue where Indiana was. So I just, you in those days, not even email, I wrote a formal paper-based application from England as a young man rather naively.

Two months later, get a call. Four months later, I'm flying on a plane over there to do a postdoc. And I'm introduced to a fabulous group of people. They were very strong as sort of theoretical modeling cognitive scientists. And they were themselves trying to understand how their work could actually have practical implications. And the Air Force had sort of enabled them through some resources to deal with some of the problems the Air Force were dealing with.
And in particular, and I hope I'm not getting too long-winded here, he problems that they asked me to look at and to help them on were related to the selection and recruitment of young Air Force cadets who wanted to become fighter pilots. And in particular, the training costs were huge for this group.

Obviously again, the cost of recruiting the wrong kind of applicant, somebody who would

actually not succeed in the training, was a problem that they were concerned with. So they actually had a first rate psychometric testing setup in there, which had a lot of civilian psychologists also working with them. And our group, and we in Indiana got to wrestle with this sort of problem. So I became fascinated with, at this point what might be a predictor of performance under high stress situations.

And it turns out that just in case your readers or listeners are sort of interested in this, that one of the best predictors of an ability to be a successful fighter pilot is working memory speed, which is how fast on very specific tests of working memory they can correctly react. And you can imagine why scaling it up to the sort of performance dynamics that are involved in that kind of activity. Microsecond speed advantages in the cognitive level really sort of matter.

Anyway, from there, at this point you say, well you haven't actually mentioned information science yet. And that's the curious thing is because at that point I was totally sort of unaware of information science and I saw myself as a psychologist largely.

But while I was in Indiana, I was invited to the information science program over there to give a talk on ~ human-computer interaction and interface design. I gave the talk and it was received so well that I ended up in a series of conversations with them and, long story short, I went back to England to rejoin USANT in Loughborough for about six months and then the Indiana folks said, look, we've got this vacancy and we'd really like you to come over and work with us and you can work in information science and work in cognitive science jointly. And again, I thought, young man, I'll do this for five years and come back, but that was 25, nearly 30 years ago.

So here I am, it is 30 years ago, I'm losing count. So I'm there and I get interested in, I'm always interested in the same problems. How do we actually take theoretical work, broadly in the social sciences, but particularly in psychology, and actually use it to gain advantage in whatever problem space that we're working in. Is it design? Is it personnel selection? Is it management? At this time, course, you can imagine that computers are exploding, the adoption of computers is exploding. There's huge interest in how people are going to read and comprehend and navigate digital documents of vast sizes that you find online and how we can actually exploit this for increasing human comprehension. And of course, that seemed to me, again, a fascinating problem.

And so I started pursuing that line of work and doing research in that sort of space. In Indiana, we created a whole new school of informatics to sort of deal with some of these problems. And I became a director of the master's program in human computer interaction there, which led me to my current school, which is the School of Information here at the University of Texas at Austin, which at that time was a graduate school of library and information science, that wanted to pivot and they asked me to come down and help them do that and what I thought again of as a five to ten year project has turned into a of a lifetime's career.

We created a school of information. We now have, you know, 400 undergraduates in informatics

who are doing human-centered data science and user experience and health informatics studies. We have a very successful master's program, a master of science in information and we have PhD program.

So we're 800 students in total and we're growing faster than anybody else on campus. That's a challenge. It sort of reflects the fact that out of, suppose, long traditional concerns with organizing and curating information, which is, I think, the origins of information science, technology has empowered it and augmented it in such a way that it's just amplified the field, the growth of the field. So you have schools like ours now, full, full level research schools, bachelors through to PhD.

So I've been in Austin since 2002, I believe, so that's 23 years. And in a nutshell, that's where we are now. I served two terms as dean. I decided that being a faculty member is far more interesting than administration, which it is. So I came back to the faculty about six, seven years ago and have been enjoying life since.

Mark
Wow. I'll be honest, I think one of the reasons why I like your work so much is as I come from just a graduate information science background, but one of the things that struck me about the discipline was this idea of it being a meta discipline, a discipline of other disciplines. And the, idea that, because before I got to uni, I had this kind of outsider's idea that there's, there's, there's the hard sciences and there's the soft sciences and basically the psychology and sociology. And that's kind of it, in the soft world.

And then suddenly my eyes were opened to this thing called information science, which is has people like yourself from a very psychological background, but it's got people from a maths background, philosophical background, but from a technology background, because it's all, it's all relevant.

And it's some of the problems it faces scientifically and Howard and I have discussed this in previous pods is that I'm not, I'm not qualified or smart enough to say how difficult it is compared to other disciplines, but I think all academia has its own unique set of challenges. So, but I think with the hard sciences, when you're observing certain phenomena with certain tests, that's a certain type of hard problem, but you're trying to get to the root of things like in your description, you just mentioned about how to optimize certain information pathways or systems. That's a very hard problem. And if you do take it through the conventional approach of the psychological view, or perhaps even a organizational or biometric review, you can kind of miss that secret source of everything. So, and that's what I, I really wish information science had a bit of a bigger profile because I think it's got the tallest, a taller order sometimes. It feels that way instinctively. And I just really admire all these professionals from different fields trying to bridge that gap.

Sorry, Howard, do we want to say something?

Howard

Wow, yeah. I mean you listen to Andrew's learning process and career journey and that's kind of symptomatic of how most people and this should be everybody in the world because everybody in the world is an information scientist even if you just looking out the window or looking at your phone or going shopping somewhere or supporting a football team or reading a newspaper, old shows my age. And suddenly to actually to do like Andrew is doing to go on a voyage of discovery to actually kind of lift the hood metaphor on how these processes work

Not just the mental processes, the psychological processes of how our brain takes in information processes and uses it to inform decisions for action or inaction. But also the tools. It really stands out to me and for me it's almost like regardless of your field or your profession, right from primary school through tertiary education you should be doing courses in information science no more so than now when yes we've had this explosion of data and computers and like Andrew I'm old enough to remember doing this before we had computers ~ boy but this idea that you have deliberate false information or information overload

Not just as a passive factor but as a deliberate process by certain actors and stakeholders to distort the information science application that we're all doing as individuals, even just as members of the community. But the other thing that strikes me Andrew. I came to this like you did but as a law enforcement officer I came from a scientific background. I'd done a science degree, an applied science degree so I knew the theory but I was always interested in how can I apply that practically to make a difference in the workplace and then I go into law enforcement and I've always felt that my academic knowledge and my academic discipline to collect and collate and test information come up with theories stood me in good stead as a law enforcement officer and when I started getting involved in analysis I was already doing analysis but the job opportunity like you came up for me to do the training and look into some of the theory and the existing knowledge at that time globally in my case I went to Texas Austin on a two-week course and it blew me away.

Not just that there were some practical processes and theoretical processes you could apply, in my case for law enforcement or law enforcement type tactics, but how thin it was, how basic and how unstructured. And from then I've spent my whole life trying to identify good practice and I wouldn't like Mark says I wouldn't call it a science I wouldn't call it and art for me it's kind of a philosophy because it affects everything you do

But one of the things I did was look at anthropology of it and maybe that's the wrong word but as thinking sentient beings there's yes how our brains work and everything else and I give best to the psychologist for that I'm just a journeyman practitioner student and always will be but for me there were three stages there's the tools; we are toolmakers as sentient beings

So what tools do we have? And I don't just mean our sensors, they were the first tools, if you like, between the brain and the real world. But what tools do we have to enable us to improve

our information science processing? Secondly, what's the raw material? What can we feed into that process that the tool can work on? Because the greater the options for data input, the greater the potential for the tool to come up with a rounded more complete and robust product.

And the last thing was how does the user of the tool with that data access it and actually put it to use. The kind of the interface the ergonomics of how can I interface with this tool and at the time and this is back probably in 1985, IT was just coming into law enforcement and there were a small number of data visualization software tools commercial companies saying even basic stuff like Microsoft you could use but there were other companies that were dedicated to creating these visualization tools.

Part of my role was I went out and looked at the tools and I did a quasi scientific study where I went out and I just did open source research and I found them there were like like 300 data visualization tools or tools you could use for that and that was quite important in law enforcement because some agencies, some nations were committed to one or two commercial products.

Some couldn't afford any commercial products so had to use what was freely available. And you started to get this tribalism across the profession. My story was look, there are loads of tools out there. The trick is to understand that the tools you're using right now are just the tools that are available right now.

You need to be aware of what these other tools are and go out and try them because there'll always be new tools don't commit yourself to being you know the the appendix of the body in terms of the tools that you use if you've invested in this one tool you will become redundant because that tool will become redundant even if evolves new data comes along and sure enough we've seen that

i've just been doing some research. Just some prep for a... I've been asked to go do a presentation back in my old home force to the analysts who... I was the first one to train analysts in my force you see as a result of going to Texas and they said would you come back you know 50 years later and say hi you know it's all my fault blame me which is very nice but I was just updating some slides or something and looking back to those 300 that identified AI-85, if you look at AI as just one example of a tool just google it you're talking about at current estimates 70,000 tools 70,000 AI driven applications and I won't go into the subcategories so I think I don't know I'll be interested to see what you think we've gone through the idea of big data so we've volume we've got variety in the form and structure and where you get it from that was the big first big hit, but now we're into a similar situation where which tools, you know, there's no, I could look at 300 because I had time to devote to it. I couldn't look at 70,000 today to be fully current and aware of what's coming out.

They're coming out faster than I can breathe. What's your thought on that kind of evolution and how it's impacting on information science, but also on the human ability to interface effectively

with the data?

Andrew

I think we have a huge challenge and the speed of technological advance is of course what captures attention and people focus on it. And I suppose this is where I come back to the idea of what we mean by information science and how I try and encourage students to see it. I think of, talked in sort of triangular terms in ways that are very similar to the way we would teach it. I would say that there's a triangle that consists of data and there's extraordinary amounts of data now, more data than we've ever had. I don't know how we quantify it. And I do always smile when somebody says, you know, we've got more data in the last two days than we've had in the history of the universe.

And I think, you know, that's a lovely story. But how does one possibly test to evaluate that? But you don't have to just to take the principle that or the idea that we are are, if you like, drowning in data. That's one apex. But then the other is, you know, you've got data, then you've got people.

And that's a huge complex part itself. And then you've got the technology that we try to create to interface between the data and the people to give us what I refer to as this emergent property called information.

So when people say, we're drowning in information, I say, we're not actually drowning in information because for it to be information, it needs to be data that's actually mediated by the human cognitive system. So it doesn't become information until there's a human involved with it. Now that is a key to where your attention should go.

It's easy to get obsessed with the speed of the technological advances. It's easy to be overwhelmed and stand back in awe at the tsunami of data that's sort of coming at us. But I say in that great avalanche or that rapidly exploding environment, there's something in the middle that doesn't change very quickly. And that's where you should give your attention. It's the human cognitive system.

And of course, I use the cognitive, I'm talking about an embedded, a cognitive system that's embedded in a whole series of social and cultural environments itself, which really does matter in how people think and see and interpret. And so our job as information scientists is to study what gives rise to that emergent quality we call information. And yes, be aware of the technology.

Always keep an eye on the technology because change is fast and things you think are problematic or difficult or impossible yesterday actually could become possible tomorrow. But really we need to understand is how do we design these technologies and these tools or how do we exploit these technologies and tools that are there to enhance that human meaning making,

that extraction of information from the data. And that is just to encourage us a subtle shift of focus to say, okay, I really need to think about people here.

If I'm helping you guys make sense of data and intelligence. You're the experts in the domain. You understand the crime world or the policing world. But what I understand is ways of getting at how you're thinking and seeing and where the technology might be blinding you or actually not enabling you to actually extract information from that data. Or the data itself may have some gaps which limit the information you can abstract from it.

And I think that's where we start saying, our contribution here is to say, how do we fill those gaps? Or how do we enable that, faster emergence of information from that data set? What are the technological design decisions we should take, or the technologies we should exploit, or the technologies we might want to craft and build that will enable us to enhance that information abstraction process? And that makes it sound somewhat theoretical, but it's actually quite practical. So we tie that down very much into a set of skills involved with how do I design such tools? How do I actually study contexts of use?

For example, police work, or it can be commercial activities, can be educational activities, medical activities. They're all contexts of use. How do we study those contexts of use and understand what the dynamic interaction between the data, the people, and the technology is here so that we can best enhance the emergence of information from that scenario.

People say, well, that's not rocket science. say, no, it's not rocket science. It's much more difficult. We know how to build rockets. We've done it and demonstrated it. It's really, really hard to build enhancing technologies for information activities. And it's really hard to develop technologies that actually augment the human cognitive system, not just hold it back or not just even make it more efficient.

I sometimes we'll settle for efficiency. Sometimes we'll settle for a more effective technology. But ultimately, in my view, I go back to Engelbart and Licklider's early work in the 60s. We want to build, we want to exploit technology that actually augments our way of seeing the world or understanding the world. And that to me is still the dream. We're a little far off, but we, know, chip by chip, we go at it.

I think we're living in a world where I think everybody can understand when I talk about information that way or talk about information science that way, I think most people say, yeah, I agree, that's important. And is that gonna help us with misinformation? Is that gonna help us with disinformation? And I said, yeah, it is because the way people abstract and take out those ideas is core to understanding that phenomenon, that problem. And of course we have design actors in that space who actually want to spread or want to encourage or want to enable dis and misinformation because that's their design goal.

And frankly, right now they're a little ahead of us. They're better at doing that than we are at

actually finding ways of countering that sort of balance. I mean, that's just sort of, as you go around and I you know, I try to always be aware of what's happening technically. And I've got the advantage of working with some brilliant, brilliant technical people here who can always sort of bring me up to date on things.

But I always remind the students that if you want to think of problems in information terms and as through an information lens, you have to concentrate on people. And that's what gives them a sort of unique skill set and a unique professional identity. And is that a science? Well, we have arguments about whether it is or is not a science. But I certainly go back to something you said there, Is it its own unique discipline?

Probably not, because I look around the faculty here, and you know, I take 20 faculty, we've probably got 12 or 13 different PhDs in there, everything from engineering, computer science, psychology, sociology, communications, you know, and we, people with a humanities background, so it turns out that humanities scholars have an extraordinarily rich way of, you know, thinking about the world, understanding history and meaning, and the relevance of information in that sort of process. It's a fascinating meta-discipline.

Howard

Love that because you're from you're making very complex fields and issues and challenges simple which is what any good true expert or genius or academics the wrong term professional would do the second thing is I like the fact that you're explaining that it's about servicing a function

It's just about effectiveness and efficiency as a means to a different end. You're not going to make the decisions. You're going to provide a better process and more effective process or efficient, whichever terms you want to use. So that other people can do their jobs, their function, function better or be more effective and efficient, which is just where we come from. When you've got those first principles.

When you're right it makes your client base more confident because they're better able to understand what you're talking about. You know when you go to a doctor and say what's the diagnosis and the doctor says bad news you've got lung cancer you say well based on what and he says well I could tell you all about the epithelial lining of your stomach and sorry your lungs, alveolar I can show you the MRI scan but you don't have to read an MRI scan I can show you an x-ray you don't have to read that, I you the blood results you don't know how to read that and you think yeah I don't need that I just need to be able to trust you that you've done that so that your final conclusion is this.

I tell you it reminded me of at one point in my career when cyber crime was coming along this idea that people would use the internet and cyber to commit criminal acts, the various UK forces I was responsible for the intel process in a region with with Mark and others and I got called to

say look we've got this cybercrime problem coming and we don't know how to deal with it and I can remember going to meeting with the I had seven chief constables in total four of them and various other representatives very important people really good at their jobs, quite a bit older than me and they were pulling what little hair hair that they had out worrying about this and I said look stop we deal with crime you deal with crime you're an organization that protect society from crime or punish people who commit crime direct or indirect involvement people commit crime it's the seven deadly sins.

You know, the criminals are doing it for a particular motivation. The fact that they're using cybercrime is no different to the fact that at some point, you know, I've got historical documents for furious riding of a horse or a carriage, you know, before the motor car was invented. Then the motor car comes along, you've got a category of criminal behaviour that's just exploiting that latest tool.

Cyber is just that. All you need to do is set up a unit with experts in IT and cyber processes, not you, for them to actually process the data and give you the simplistic information about who's doing what and you go back to you're dealing with the same crime you're dealing with the people who doing burglaries or murder or any of the other stuff. If you keep at the end

All of this is a facet of human behaviour Humans are very complex organisms but they tend to operate on certain very simple principles i.e. survival and or personal benefit goals Can I live and be can I improve my life by whatever measure that is for them as individuals Once you've got that sorted in your head throw all the data you want and all the tools that you want but you're always going to come back to that relatively simple focus. Is that fair?

Andrew

Yeah, I think it is fair. mean, you know...How we define crime, for example, is an interesting phenomenon that's not tied to any particular technology. So of course, any technology comes along, there's going to be crimes associated with it. It's just a human act. And I do think you just need to focus on the human who is, as I complex, but subject to some very predictable laws, some limitations on our cognitive architecture, which we all share. I mean, it's a universal form.

Once you start understanding that and then of course recognizing that yes, there are huge individual differences There are forces of culture. There are context and societal influences But you need to tease that out and understand it, but you're dealing in a problem. That's essentially human and I think I view information science very much that I think it's a human science and it's a science of humans not a science of technology and that's possibly a point of conflict, suppose, with some people in the field would say, no, it really is about the technology.

I think, OK, the technology is exciting. That's what you get grants for. That's what you want to play with. But you're really playing with it, not for itself, but because of what it enables humans to do. don't lose sight of that. And I would define the field around that kind of focus.

Mark

I'd agree with Andrew. I would only point out that I still think you could have information science without technology. Whereas you couldn't. And I think that's the, when I look back, excuse me, when I look back at my degree, I think about here's this discipline and I'm on a pendulum, right? I swing through my academic career. I swing from, yes, it's a discipline in its own right.
to know it's kind of an amalgam of everything that's kind of overlaps and there's that something in the centre you kind of referred to and that pendulum swings every year of my life.

Where I am right now is I think that is information itself worthy scientific study? I think the answer is yes, but I think that is a big question. I also think there are certain aspects of information science which make it a very interesting discipline, but also make it very risky discipline. What I mean by that is some parts of information science are fairly philosophical and deep in nature, very abstract, very out there. And you can see why people don't want to fund it. Don't want to get it for, you know, don't pay for a degree to get it. You can see why that's an issue. But some of it's very practical. There's an applied science part, whether it be your work in research and human interaction, whether it be design principles. And I actually think that the, and I'm going to use an analogy here. So it's a short walk to get to a broader point.

But if you remember back to, I remember when I was going through the information science material of the late nineties, early two thousands, and we, was this bias in the texts and the bias was information always has utility. Information is an amazing thing. When the internet fully reaches maturity, all this information will lead to an almost utopia because we'll all be making the right decisions at the right time. Democracy will be better. People will be more informed, more educated. And then what we found is actually, no information as hazard. And this isn't an appeal for censorship or an appeal for anything draconian or Orwellian here, but something in the discipline completely got blindsided with, we didn't realize, but how do you manage excesses of useful information? How do you manage conflicting information? All those types of things. And yes, you can make an argument. That's a psychological problem. It's a sociological problem. It's a technological problem. But actually,

It's all of those things. And I think for me, it's a little bit like filters on your phone in that, okay, if we look at a problem with a physics hat on, you can look at the world through a physics lens. You can look at the world through a maths lens. And they're interesting filters to apply. But I think information science as a discipline is one of the few examples where it forces you to look at a problem through multiple lenses at the same time. And by doing that, I think it kind of jolts people a little bit because what I've found is some other academic disciplines is, and I'm not taking potshots here, but there are some academic disciplines that think their way is the only way.

There are people who are quite in transient about, okay, I'm a physicist and it's all, you know, it's all physics or it's all maths or for an economist, it's all economics. And they're very fierce about

that. But I think because of information science is quite nebulous and quite kind of vague.

in a very, in a very honest and open transparent sense, but it's at risk of not being commercially attractive. And you mentioned in your example about, and forgive me, I forget the team, asked you to turn it around, which school it was to turn it around, that pivot away from library science to information science. And I'm pretty sure there's many other, other units out now that are thinking about pivoting from information science to data science. And my own personal view is I hope they don't do that. But, but

Yeah, yeah. But that's also followed information science long, right? We had document science, first of all, then we had the library sciences, then we had information science, then, you know, data science I'll leave for another day because my views on data science are quite well known. But yeah, so I'm just curious on your take, where do you think, how do you see this evolving and what do you think needs to happen to the information science community more broadly for it to kind of survive and thrive?

Andrew

Well, there's a couple of things you said in there that sort of spark some responses. I first of all, you said, I don't think it's all about tech. It's certainly not about technology. You can have information science without technology. I use the word technology extraordinarily broadly. So for me, a book is technology. A cave painting was an early human technology, which we're still discovering. The origins of, we used to think the oldest ones were 25,000 years old. Now we think they're 75,000 years old. How far back are we going to go to discover our own history as creators of information objects and what they conveyed, we're not sure, but they certainly are information technologies of the kind.

So I use the word technology very, very broadly. But, you know, the idea of how, you know, information was going to change the world and it was going to solve lots of our problems and we're going to have this utopia. Yes, there was a utopian belief about the power and largely the power of technology to enable the spread of information.

and that this information would enable us all to work from home, to have jobs that were created while drudgery was done by robots and tools. And I think to some extent we're still hearing sort of sides of that. is obvious now is that it didn't turn out that way. And what should have been obvious to us at the time was because humans were involved. That you don't have information without people, you have data.

And data on its own is never going to solve problems. Data doesn't solve problems. Data is stored. Data is handled. But information is experienced. And that's the crucial difference. And if somebody says, well, data science is going to do away with information science, I'm saying that's a very foolish understanding of data, a very naive view of the world, and a particularly naive view of humans.

So data science, it's interesting, but if anything is going to be challenged by AI, think it's data science more than information science or design, if I had to put a bet on things. So the challenge, of course, is convincing others that the way we see it, the way we talk about it, the way we articulate information science is supportable and is manageable. And I'm saying I've had years in administration with changes in leadership at universities and I invariably had to explain the School of Information over and over again to new administrators who would frequently say something along the lines of, how can you really have a School of Information?

Everybody deals in information and I would say well you know everybody on this campus deals in education but we somehow have a College of Education.

And everybody on this campus communicates, but we have a College of Communication. Why is that? It's because those fields don't just exist to educate or to communicate, and we don't just exist to inform. We exist to study the phenomena around the processes that make education possible and how we might train a professional class of actors who can engage in social

education for the world and become teachers.

The processes of learning are important to study, same in communication. Information is just the latest area where we have that same problem. We need to understand what it means to be informed. We need to understand what makes for quality information and what makes for low quality information. And that is itself ~ a warrant to study and have a college of school of information.

And that would usually send them puzzled, you know, looking away for a while and keep them quiet for a bit. But then they'd come back and they'd say, well, tell me a bit more about this information. And I'd have to sort of explain to people because, you know, they understand, they think they understand physics. They may not actually understand physics, but the need to have a physics department seems perfectly normal. I always remind people that, you know, there was no computer science in North American universities until 1962.

and possibly in the 50s people were having exactly this argument, do we actually need, is there a field, is there a discipline of computation? ~ It may well be that computer science doesn't exist in 100 years and information science does. The academy is, the epistemology of knowledge, what we consider appropriate disciplines, shifts and moves. I suspect we'll always have philosophy and we'll always have history and we'll always have languages and mathematics, but other disciplines are not guaranteed to be seen as important by humans in 200 years time. I think we accept that and don't just think because you create a building, you create a discipline forever.

So I see us as emerging, I see us as somewhat fluid. are, the common phrase is interdisciplinary. I actually think we're transdisciplinary. I think we take ideas from different disciplines and we take people working in different disciplines where we identify a common problem. We bring different theories, different methods, different models, different approaches to addressing the problem.

And I think that's what information science in its ultimate form is, is a transdisciplinary problem space. But from my point of view, ultimately more focused on the human than it is on the technology and certainly on the data. And I'll go back to that mantra, data is stored, it's managed, it's held, it's recorded. But information requires an experience. And that's the human angle.

Mark
I think that's, I couldn't agree more. think to be honest, think that your example of an administrator asking you, why do we need this? Because it's just a given. It's just accepted, right? I think that's an overlooked problem. I actually think that information science, or at least information awareness as a discrete concept is something we should be teaching almost at a primary school level. Because I think people just pick up that we teach people

We teach kids what to think and not how to think. And we certainly often don't teach kids about the information. I mean, back in, mean, all three of us are essentially more exposed to the 20th century than 21st, but essentially we grew up on essentially centralized, you know, textbooks and experts and broadcast media. And there were single points of reference, right? And we kind of, we knew the system where now

I don't know what type of person I would be if I grew up with social media or if I grew up with with and I think I'm I think we grew up in a an information, not a vacuum, but with information scarcity. And I think now we're in this world of information abundance. And this is why information science for me is has never been more important. I think it's important because we're not teaching our kids how to use it properly.

And I think that's going to take a couple of generations to sort out. But I the next problem that we need to think about, and I'd be curious about what you think about this, but I'm going to phrase this carefully because I'm going to mess it up, is that how did I have spoke to other Intel colleagues and we know that AI is going to be part of the sense making process. It's already happening. There are some of our colleagues that saying AI can never do our jobs and you know, it's a very kind of technophobic, Luddite approach saying, you can never replace me. And

I'll be honest, we have our own views. We know that the AI products are coming and they are going to be replacing part of our roles in the future. Perhaps even a lot of our roles in the future. But I wonder if the discipline, because information science is so broad and so complex, we're gonna, it needs AI to help pass that complexity a little bit. And so we talked about the biases that we had about information as utility versus utility as hazard for humans.

I'm totally with you. This is a human based, human centric psychological approach. But maybe we also need to be thinking about how large language models and other, know, AGI type, more generalized AI is going to use information because I think that I think there's a hybrid approach coming in the next 20 or 30 years, right? It's not, you know, we've had a good30th, well sorry, for information, a good 50, 60 years, right, of humans having the solo stab at it, we're about to enter a new space out. do you think, sorry, that's an assumption I'm out about. Do you think AI is going to be part of that information science journey?

Andrew

Undoubtedly. mean, I think it's easy to predict, say, it's going to be turmoil. It's going to change everything. It will certainly change things. We need to learn to leverage it and exploit it. And we are going to hit a point, I think, where it is going to change the jobs in some fundamental ways. But I do still believe there's a space where human judgment will remain key.

And the beauty of playing around with AI now and being able to generate these sort of wonderful responses to complex problems, it does really take your breath away sometimes at what large language models are capable of. And they will only get better. People say, well, they

still make mistakes, still AI hallucinations. Yes, but they will get better. Think how fast it's occurred to us to this point. It'll only get better.

So I do think there's the scope for massive changes here, but I do think human judgment is still fundamentally central to the sort of professional role. And I'm not sure how we can augment that. We can probably find tools that would help us gain more confidence in some of our judgment calls. And I think that's a really useful thing. You know yourself, sometimes you have to make decisions based on incomplete, you know data and you know you've got judgment and you're trusting your guts and you're also trusting your memories and you know you're also being as logical as you can be but we're aware of our own biases in our cognition.

I think AI tools could be a very interesting compliment in that space but I think we're going to hit a point and this is where most people don't want to have to think about. Well we're going to have to start legislating for information.

And that runs counters to a lot of the ideas of the internet is free and it's a democratic system where anybody can have any idea. But we're seeing the downside of having unfettered data with millions of information emergencies occurring in people's minds and then being amplified on and the net effects of that. So you get this very complex chain of of causation and ties and cascading of ideas and interactions.

And you start thinking, okay, whatever we started from, whatever we thought was good with this data point has just become warped. And sometimes intentionally so, and sometimes in a very manipulative kind of fashion. How do we as a society deal with that? And I think we're running into the point where we need to talk about legal controls and governmental intervention.

Regulation, suppose, no matter how light a touch, I think regulation is inevitable in our future for information and that's a quite interesting one. Now when people get worried about that, I always say here's let me give you an analogy of why I think there's a constructive way of looking at this. If we treat information less as a commodity but as a form of nourishment.

If you view it as good information is like good food, bad information is like toxic food, we have created a food delivery system and infrastructure and a legal apparatus around it, a regulatory apparatus around it that covers food production and the idea is that we all generally believe this serves us as a species, as a society, quite well.

We can trust our supermarkets, can trust our butchers, we can trust our farmers. Now, people can point examples of where this has gone wrong, but generally, the food supply in our parts of the world is really, reliable. That didn't occur by chance, that didn't occur just by free market. Actually, you can't just say, if people are producing toxic food, they'll lose all share because people will die and nobody will buy the stuff.

That's a crazy kind of view of how you might run the world. No, we have regulations and we

have rules and we have established practices for handling food so that the supply actually nourishes people. And I think we need to start thinking about information that way. And then you can probably have less fear about the idea of regulation. this is going to be the government telling us what we can say. No.

This is just going to be more about what we think of before it becomes public, before it gets shared, before it gets spread. There are some regulatory understandings of that. That's not ever to stop you and I cooking food, we grow in our back garden for each other. That's fine. And we can have crazy ideas and share them with each other. That's fine.

But official channels of communication, information that's consumed or purchased, information that's used in the educational system needs I think at some point to wrestle with this idea that we're going to have to get some regulatory.

And that's a very unpopular idea, I'd say. as I said, think of it more as information, as nourishment, and you start to see the ways in which we can think about it, which actually will help us all.

Howard
That's not an unpopular idea here. You're preaching to the converted. We've had discussions on AI and what nobody seems to get with a large language model is it's not working on data. It's working on information that other humans have already created. So again, it's a product of a human brain. The second thing is what these systems provide. I love your idea of these models can augment our thought process. I like that idea. It's kind of AI becomes the ego to Dr. Frankenstein who was the genius who the mad genius who comes up with the ideas. But what we get in this market of junk food and again I love your analogy of junk food is information is entertainment. So rather than people accessing it to inform decisions they're accessing it accessing for what Mark and I would call the dopamine hit and and you see that in the politics of the world right now and like you say big business we want to make you feel good and try and control the way you think so that you feel good even though actually it's for a the actual objective is a business purpose or another purpose that's not about you being good. It's a false feeling.

One of the things I struggled with this idea of misinformation or false information it's a big thing now fake news blah blah blah but I used to go to Mexico quite a bit and I used to be a keynote speaker on a program in a university in Mexico for major business leaders that come in on a weekend because they're busy people and they did a basically a post-grad course and the guy who ran it was a very senior ex law enforcement intel operative in Mexico and South America friend of mine and being cops we used to try and set each other up with practical jokes or embarrassing moments you know

I'm sure you've done it in your career. The flops were in front of an audience. And he once set me up for that. I'd been blathering away on my usual day with these people. And he'd clearly set

a student up to ask a question. And the question was, well, this is all very well, Howard, your information processes that you're talking about, or your intelligence processes. How do you deal with misinformation?

And I knew he was low-balling me here. And I said, well, I don't have a problem with it. It's not misinformation. It's actually just information, the same as any other information. So if you have a good QA process or a robust process that tests all your information, you will identify that that is false information, that it has some QA limitation compared to other categories.

And what that then does, if you can separate it out as a subgroup, a sample from that, population of information that you're working on, you can start to look for patterns in that misinformation that will maybe help you understand how it's being created, and not just what and how and where and when, but why. Who are the actors? if it's deliberate, you know, is it a passive product of a flawed process somewhere, or is it something that's malicious or deliberately not necessarily malicious but designed to make you think in a particular way so it's actually teaching you about them and they're all like oh yeah I never thought of that but it's kind of coming back to this simplistic idea that information and I love your idea that there's data and information is data that humans have played with love it

in that situation, It's always telling you about the humans behind it and it's coming back to this human behavior. I look at AI and I think I can almost see a point where all the promises of AI, it's growing like a virus, like computers did when they first came out in the industrial revolution. It's kind of a viral expansion. Suddenly it's the thing and there's exponential growth in particular areas.

Howard

But I could see AI dying out because in its current form if we agree or we postulate that it doesn't do the thinking for you it merely provides you a good summary access to a large volume of existing human data, human information anyway and you still need to do the thinking there'll be a point where it burns out and you could almost see a reversal whereby people put aside the data science tools and going back go back to I'm going to learn to learn to understand how I need to think for myself because that's what makes the step from information to learning. Does that kind of make sense?

Andrew

It does make sense. I don't know that I'd agree with you that it's going to make AI die out, but I think what you're saying is we might hit the boundary, we might hit the limits, and it might actually encourage us to turn around and say, ~ you know, we need to refocus something on what's going on in here and how we're treating and understanding that.

And I do think that's sort of hugely important. And when you were talking about, and Mark, when

you were sort of mentioning, you know, teaching people to actually understand what's going on, you can imagine, you know, a school scenario where we actually do put students through the sort of introduction to the dopamine cycle so that we can actually say, look, now play with this and use this and see how you feel.

Now, next week, we can do the exact opposite. We're going to deprive you of that experience and see what that feels like. So people can actually learn to sort of regulate, self-regulate and understand the difference between when you're sort of captured and doom scrolling or whatever people refer to it as now.

And then some people feel guilty that they do it, think, I've just wasted an hour, but I can't help myself kind of thing. Okay, so let's acknowledge this is a real problem. And it's a real problem for young minds. So let's intentionally expose them to that. And let's expose them to mechanisms for handling it or reducing it or alternatives. And getting the alternative hit, which is the longer reward system of actually not doom scrolling, but actually concentrating on something with real effort and intentionality for a while.

The reward system for that is deferred very heavily. You can just think of it in pure behavioral science terms. But it can be very interesting reward system as well. But we now have to teach people that. We didn't have to teach them that before. Eventually we say, you don't have sugary drinks, or this is bad for you, or pay attention in class. We sort of scolded people into compliance.

But here, I think we need to actually expose particularly new members of society to the effects of these kinds of technologies and give them self-regulatory powers to get past that. It's not perfect, but I think that becomes part of our 21st century educational system. We don't do that yet, or no school I know of does that yet, but I think that's sort of inevitably going to come.

The AI world, you know, it's curious if you're old enough like us, you probably remember the expert systems of the 80s and how that was going to change everything. So decision making was going to be you know, in the hands of these expert systems and they're awfully clunky and, you know, sort of, yeah, I know it was sort of a, when you look back now, think really what were people thinking?

It's like, you know, it's like an abacus in comparison to what we have now. And so that went really sort of quiet. I think AI sort of snuck up on us. The people were still sort of working on it in the background. And it's only now that we're seeing the fruits of that kind of work. The competition power behind large language models and what they can actually yield.

So we've still got a long way to go to figure out how to exploit this to the best advantage. And other than the regulation, I do think there's a realization that there's something unique about the human. There's something about our own sense of awareness of the world and enjoyment of the world and commitments of living that will always lead us to using our own brains in a certain

way. I think that's, we will. We're not going to be replaced by AI in everything that we do. I think some jobs will become redundant.

I think new jobs will open up. I think new career paths. I always say to our graduating students, you're going to have a job title. Your first job is not going to be your last. And your job title in your first couple of years, it may be something you've never heard of. And it may not even last 10 years, because you're going to end up in 10 years' taking a job that probably doesn't even exist right now that we know.

And I said, if you can get your head around that and be guided by the education we've given you, your career path is certainly not predictable in terms of I'm going to be a teacher and I'm going to be a teacher for 30 years and retire. I don't know what you're going to be. You can be an ontologist, a knowledge analyst.

You can be an information designer. There's job titles that probably don't exist now that will exist in five years' time, I suspect. And if you can get comfortable with that.

Because of the nature of information, because it's ultimately a human driven process, we can't be replaced.

Mark

So going back to your point about, first of all, I want to say I'm with the regulation side of things. I think that that needs to be proceeded with carefully, but there are some kind of strange things. Your analogy to food is important because you're quite right. People prepare food and we've had decades of choice of food disasters to get to that point. And sometimes with information disasters, we don't necessarily get them. You sometimes get fines from certain agencies, sometimes with data breaches and things like that. But for misinformation, we're not there yet. And I think, I wonder if maybe...Here is, think, the big problem. I think within five years.

AI, it's not about AI. The problem with AI is doing a lot of heavy lifting, right? Because AI can mean anything. The most worrying part of AI that I'm worried about is that I think within five years, I will be able to go to one singular AI tool and say, please make me a 15 minute documentary on this subject and please include these following points. And I think it will be potentially as impactful as you remember the old like Adam Curtis documentaries or the James Burke connection documentaries, you know, BBC kind of quality kind of, you know, lots of B foot B roll footage will be artificially created.

There'll be a logic and reason there as in, I could do this. I could do some of this right now. I can go to chat GPT and say, can you build the strongest argument for why an authoritarian government should control all information centrally and everybody should have a license to capture, to have a hard drive. And that's bothers me because I think, well, we've started to see the early signs of it, right? We're seeing social media, we're seeing other things, but we are

seeing some positive signs, actually people getting fed up with social media, death of the internet, stuff like that. I wonder if maybe I do support regulation, but I also think there's something to be said for institutions. I also think that the Academy has a part to play in this. I'm not wanting to take us down a political route, but I'm to go there if you want to, but I think...

One thing recent events have shown us, but even before the current government was in place, globally, academia, I would argue, has been in a bit of a problem space for the last 20 or 30 years in that we kind of slowly became less about becoming academic research and more about being commercially viable and commercially attractive, almost to the point where some universities are corporations, essentially. They're not really universities in the old sense of the word. And I think if we can maybe go back to that, and I'm asking you to make any comment that you're particular university about, I'm talking about academia globally. I think one of the things that's killed information science off is that actually a lot of universities, because of the pressure to become more commercially viable, they have essentially simply sided with either the big tech companies or the political players of the day. And I think that in some respects, that's completely undermined the rule of experts, the rule of expertise, expert record, if you like. And I'm not saying it was perfect before. In the 20th century, we had publishing houses and we did have cliques of professionals. And if you weren't in that clique, yeah, you weren't getting a look at it. And that was wrong. And that was absolutely wrong. But to now go to this market space of ideas where anybody can create content of any kind, very convincing content, that's going to take some management,

Andrew

Absolutely. A lot of it comes back to then this notion of trust and how does trust get enshrined in both the educational system and human governance and institutions, as you say. And I think we're back to a of a pre-20th century model where we're first seeing what broadcast technology can do and what it's capable of before institutions of trust sort of became an issue and so newspapers sort of went through that in early days and newspapers now probably are sort of a dying medium and which is is quite sad and I do say this element of how we know what to rely on so there's the obvious parallel here of course is misinformation and what's the source and why should I believe that and do I believe it and you the convincing way that AI can actually generate imagery now. Literally put words in people's mouths. And you consume that and you think, well, why did they say that? And that must be a terrible person or a terrible politician or that's an outrageous idea. No wonder we have to get rid of this person. So what can you believe? So what constitutes trust? And I bring that back down to the information triangle, the emergent property, what constitutes trust in human mind? What are the cues for it? And I think we're seeing that they're very easily distorted because we do, we...

It's like eating with your eyes, know, a meal tastes better if it looks better. We actually believe what we see very, very much. We have to now start to educate people to question what they're seeing and actually look behind the superficial and start to interrogate the source. know, back to, you know, think Howard, you said everybody's an information scientist.

Yeah, they are. Everybody has to be an information scientist. I think we do have to teach people to see things anew. What constitutes trust and then you brought it very specifically onto universities. I think, I mean, there are many reasons why we've seen the current sort of dip in faith in journalism and in higher education. But I think one problem has been the certainly the late 20th century, early 21st century model of education, higher level education in particular, an investment for a job, an investment for a career. You come and get this degree, you're going to have a middle class life assured and you're going to have a much better job and much better job prospects.

And I think universities sold that to people because it's a very seductive argument. It explains why you should be spending money to do this and allows governments in systems that used to be entirely free. I haven't been to graduate school and is practically free other than my living expenses and I paid very, very little for superb high quality graduate education in Europe. And here I see students going into debt and spending a lot of money and society, local governments, state governments, federal governments saying, know, universities should be run a bit more like businesses because they offer a sort of a business benefit that you pay to play and once you play in that space it translates into life opportunities you otherwise wouldn't have.

And I just see people making that argument all the time and it seems so convincing. Okay, I will pay 10,000 a year or 20,000 a year to study this program because I'm going to get a job that's going to, you know, easily swamp that cost in five years. And now we're realizing, of course, it doesn't always work out like that. Or if you only pursue that line of thinking, your university is only going to have disciplines and degrees which translate very much directly into jobs of the day.

That runs extraordinarily counter to everything a university is supposed to stand for. The social contract of a university is to ask awkward questions, to vet knowledge, create new ideas, to explore ideas that might seem frankly outrageous or crazy to people outside because the potential payoff in knowledge is what we're hoping for. And that we ask people to commit to a career in doing that, we enable them to do it, and we sort of get out of the way. And that model, the ideal of the university.

I think it serves humanity, would say. I'm probably biased, but I think it serves humanity really, really well. And I think we've lost that. And that goes back to your point about, do we have an equivalent of the BBC, if one would accept that as a model? Do we have an equivalent of the BBC on the internet now, or as sources of information? We don't have a lot of them. have everybody with a microphone, ourselves included, as a broadcaster.

And in that world, it's really, really confusing for people. And we haven't actually stopped by to say, how do we actually educate into that space? What constitutes an institution of trust online? If you think Facebook, because of their size, should be just trusted, I think we'd all agree that's hugely problematic. we've created these monsters, and it's all part of the idea of deregulating.

and I think we've just gone too far.

Howard

You make a good point there Andrew but for me you're right Mark was pointing it to the academic business model but it applies for me to every business model of all the major institutions. Health providers, banks, local government, service providers, retailers. They've all moved to ways to actually are purely down to financial profit usually with a reduction in quality and or a reduction in choice.

Think of some of the major global shipping companies, shall we say where you can buy online and we can think of many. They're not all the one from America you know go to China and some of the other places in the world where there's control by governments, they're bit players compared to some of the local ones. But they're all the same. might think I've got loads of choice and convenience, it's the junk food. But the quality of the products you get is variable. You don't have that local interaction where you walked into a local corner store and were able to inspect and question and query before you bought, test it with all your sensors directly, rather relying on hearsay or maybe haggle over price or offer different forms of barter rather than paying with money you know the way that we exchange goods for other goods and services that's been monetized now and i'm not just talking about these days with online accounts and that kind of thing money was a substitute for barter back in the day so that even that process so I think it's far wider than education but You're right, it almost comes to point of what do we need to do for people?

I agree with everything you said about regulation but ultimately I think the point that stands out to me is like you said we need to educate individuals to become their own QA processes and users of data and information rather than relying on any intermediary they test everything for their own purposes and not get dragged into the dopamine net they think about you know what what do i actually need for survival not what makes me feel good and what worries me is that's kind of hard when all the others make money for business so there's always going to be academic funding and incentives for people because the people behind it are making more money even governments where's the incentive to sell that to people. it's kind of like you you choose between junk food and a carrot. You know I like carrots I know they're good for me but if you put a packet of wine gums in front of me I'm probably going to eat the wine gums which is why I look like you know and I'm a sentient human being I know better but we ultimately fail in our humanity don't we?

Andrew

Well, know, so much of what we do and what we get satisfaction on, the temporal sequence is so low and the payoff for effort is so long. And I think acknowledging that as part of our human cognitive system or as our value system or as our way of understanding the world, we need to

educate into that as well. You know, I think there's a slow growth in recognition.

you see that in goods and services where people do put value on the local, they do put value on the face to face, they do put value on building up a relationship over time. And I think the most successful companies will actually create technical information experiences for their clients, if you like, or their customers in ways that will enable that. You know, I'm sounding like an old hippie now when Im talking about things like that. I do think we need to get back to a slower engagement with the world, that the dopamine hit of technology has seduced us all.

And it is powerful and it is exciting, but there are sometimes the old Japanese tea-making ceremony, there's a need for the equivalent in the information world, I don't know what it will be, where we will be intentional and slow. And that experience will itself be the reward.

I don't want to deny anybody wine gums. I'll put it that way.

Mark
Right then. I I liked your point about maybe the Collators could be the next BBC so maybe that this show is the inoculation that everyone needs if nothing else.

Howard
Don't tire us with the brush that is the BBC of today.

Mark
I'm a massive old school BBC fan, I'm sorry. Yeah, no, I get it, I get it. No, absolutely not, absolutely not. Andrew, it's been great having you on. Is there anything else you want to finish with or happy to wind it up there?

Howard
Well, old school yes, but you know.

Nothing's forever.

Andrew

I'm ~ happy for my end, just say I enjoy the show, thanks for having me on. It's been a real pleasure to sort of knock ideas around with you guys. I am a listener and I will be pointing other people towards this and stay at this pace.

To me it's really, really important that people step back and think about this rather than a fast track video with lots of slides and people walking away with a couple of buzzwords about information and collection and intelligence.

I really like this idea of inviting people to slow down and think about this stuff, then hopefully one

in ten can apply it to some part of their own lives. It amplifies the message.

Mark

That's really good to hear. think we have one YouTube short, which was technically very successful and then it was never watched again. But we always try to, I won't say we've not been tempted by some of the cheaper tricks of, you know, trying to get promoted online and you go on YouTube and you're basically pushed towards, you know, just dramatize everything. Watch this video or you will die. And we're trying to avoid that.

You know, long conversations with interesting people with interesting views that the term collators for us now has evolved into basically we're breaking the world down into different professions whose job it is to basically perceive and relay the world. Because I think one inoculation against the problems you describe is an information scientist is going to give you an interesting take on the world. And the same way we've had doctors on the show, we've had Intel officers on the show.

We're going to get some other professions on that as well. So, but today thank you for helping to add some light on information science. and I'm hoping you'll come back maybe. And I will, there were some links in the show notes for people who want to catch up with Andrew's work. But for now I will say goodbye to everyone and wish you all the very best. Take care.

Howard

Andrew thank you it was a privilege I've loved it