

THE **NEW** BAZAAR

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EPISODE 16: COGS AND MONSTERS AND ECONOMISTS, OH MY!

HOW TO UNDERSTAND A CHANGING WORLD

CARDIFF GARCIA: Hi, I'm Cardiff Garcia. And this is The New Bazaar. Coming up on today's show.

DIANE COYLE: We need to flip that around and recognize that we're in a world of imperfect information, loads of spillovers and externalities, very little perfect competition.

CG: Diane Coyle on the cogs and monsters lurking in the economy.

Economists don't just try to understand the economy. They also influence it because as they share their analysis and their understanding of it, people and institutions and companies, and politicians start to act differently in response, in response to that new understanding of how the economy works, which means that the economy itself then changes and economists have to catch up and try to understand it all over again and so on.

That is one of the themes in a new book called *Cogs and Monsters*. It's by Diane Coyle, who is herself, an economist. And it's a book that's also about how the digitization of the economy presents such strange new challenges for understanding it. And in particular, for understanding the role of the government versus the role of markets, which is a distinction that is becoming less and less clear.

Diane approaches these topics with a truly lovely thoughtfulness and wisdom, which come from a long career as an economist both in the policy-making world and in academia. She never goes for easy criticisms or easy solutions. She always burrows deep and she makes the point that the economy just like everything else in society is always in flux. And so the job of the economist can never be finished. In our chat, Diane explains why that is and why it matters so much. Here it is. Diane Coyle, welcome to The New Bazaar.

DC: Hello. It's great to be here talking to you, Cardiff.

CG: Cogs and Monsters. What's a cog? And how does it turn into a monster?

DC: You are a cog. I am a cog. So the cogs are individuals who optimize their decisions in life, making sensible choices, given their objective function, and they don't, uh, interact with each other or are affected by, uh, society, social norms, fashions, those sorts of terrible things. So we're all cogs. And the monsters are those undiscovered creatures in areas of the economic ocean that haven't yet been properly explored like the, um, "here be monsters" on medieval maps. And that's the way the economy is turning out, the whole digital economy, and all of these strange phenomena that we don't quite know how to understand.

CG: But, but of course, we're not really cogs. It's just that historically there have been times when we've been modeled as cogs in the work of economists. And one of the arguments in your book is that actually, economists have gotten better over time at modeling people as people, instead of, as, you know, these very simple creatures that are always following, you know, their rational incentives and things of that nature, but there's a lot of work yet to be done because if we don't keep improving the way that economics is done, it can create these monsters that you've just described, these undiscovered creatures, uh, not always for the best. So what do you mean by that?

DC: Well, I, I should say, I think economics is fantastic. I am a proud economist. I have been for many years now and there are lots of criticisms of economics that I think miss the important points. So the book is about trying to highlight the things that really need to change.

And as you say, there are lots of improvements that have already happened. For example, game theory is all about strategic interactions between people. So people are not cogs there. Economists have got much better at thinking about other ways of making decisions, not just logical choice, like Mr. Spock in Star Trek, but, uh, being affected by emotions or overconfidence or, um, risk aversion and so on.

So things have improved. Across the way in the economics department here in Cambridge, there is a literal machine, the Philips machine that was used to represent the economy in the 1960s. And it's a hydraulic, uh, mechanism. So you put in some investment at one end and higher GDP comes out at the other.

So the subject has got a long way since those days when it was genuinely mechanistic. But I think they're still further to go. And one example would be trying to think about how people's preferences are affected by other people. We're social creatures. And you only have to look at people shopping for fashionable clothes to understand that we don't have the fixed preferences that economists assume.

We don't sit here in 2021 and know what goods and services we're going to want to purchase into the indefinite future even if we don't actually know whether they've been invented yet. Especially in a world of digital technologies and rapid change and new products and innovations, that's one of the things that needs to be changed.

How, how do these social influences occur, and how does that change economic outcomes?

CG: One of the ideas in your book that I thought was fascinating was that the work of economists is not just to reflect society or understand society, but also in many ways to influence society. And it seems like this is not always something that people recognize that, in fact, when you read analysis, you're not just reading something that reflects what's happening, or that tries to figure out these different relationships between these different variables, right? But that actually the very act of understanding the economy can later then feedback into the way the economy itself works, how people work.

And you have a quote in the book, uh, from a very famous economist named Ronald Coase in which he says that when economists imagine their models, when they design their models that are meant to map the real world, they need to include economists in those models, that they need to put economists themselves on one side of the scale that they're using to measure the trade-offs between different kinds of ideas. And this is really intriguing. And I- I'm curious to know what you think is the importance, the significance, the relevance of that idea for how economics is done now.

DC: Economists are very prone to comparing themselves, ourselves to, um, very empirical objective professions. Esther Duflo, the recent Nobel Laureate u- uses this a- analogy to plumbers. Engineers is another metaphor that comes up all the time.

And so we think of ourselves as looking at a situation, getting the best data we can, understanding what the objective is, and figuring out the best way to get from where we are to where we want to be. And this ha- has many, many flaws. One of them is just that the people to whom we are applying policies or interventions or business models actually respond to the things that economists suggest. If a very prominent economist stands up on TV and starts, uh, forecasting that we're about to have another great depression, people might worry and it would affect their, um, behavior. So they'd invest less or they wouldn't take a risk and move to a new job.

So that would be a simple example. But there are lots of policies where economists forget that there will be behavioral reactions to the things that they suggest. An example I like is the kind of changes to road patterns that have been tried in certain cities where you end the gap, the, the demarcation between the sidewalk, where the pedestrians are and the road where the vehicles are.

And the argument is that when you do that, you create so much uncertainty for drivers that they drive much more carefully. And therefore, there are fewer accidents. And this was clearly true to start with when these schemes began, but something like that needs evaluating over time because most people will drive the same route every day and they'll get used to it. So maybe they'll revert to their old driving habits. And

so there are lots of these sorts of responses or risk compensation mechanisms they're sometimes called.

And although economists know about these in theory, they, they're not always taken into account and practice when people are devising policies. A- another example I sometimes give is when you get an economist calling for what we refer to as structural reforms, changing some fundamental wiring in the economy, like the way the pension system operates or the tax system. And structural reforms is a euphemism for really unpopular and therefore politically unfeasible.

And, you know, politicians would say, "Well, that sounds like a great idea in practice. I understand your analysis that says it's the best thing to do, but I'd never get re-elected if I did that." And I would argue that if the analysis hasn't taken the political realities into account, it's not a good analysis. It hasn't actually done the proper objective empirical assessment.

So we want economists, we want people advising the governmental businesses to be as impartial as they can and to be objective, but there are limits to the extent to which you can stand outside society when you're a social scientist. You are part of it and people will, people will react.

CG: Yeah. And one of the points you make in your book is that when economists end up influencing the way that society works, it's not just about these kinds of mechanistic relationships and you just detailed a couple of them like with the road patterns, but also they can end up influencing societal values themselves.

And so, you have a couple of disquisitions in the book about how the sort of traditional market-based thinking that is the kind of default standard in economics ended up being used by policymakers to be applied to some parts of what they do, where maybe some economics like thinking is appropriate, but not entirely. You need to have other values that also apply, other subjective values.

Things like fairness, you know, democratic legitimacy, things of that nature, where these things should be in tension and sometimes should dominate the market-based thinking. But policymakers sometimes ignore that and just took that more economics way of thinking and used that. So can you kind of discuss that tension and how that's evolved over time as well?

DC: We've had, um, 40 years now, I suppose, of, um, a presumption in policy that the best solution is a market solution. And if you can identify a market failure, then the government can do something to fix it. But really, it's better to leave it to the markets. Government interventions have lots of downsides and there are many government failures, which is certainly true.

And this comes from, if you like that, that starting with a textbook model, that we're taught as economic students, where you start with a simple world and people

maximize their utility functions. And that's already a little strange because I've never seen a utility function or a util in the wild. So it's a strange kind of concept. But people are, are trying to make the best decisions to satisfy their preferences. And companies are trying to maximize their profits, given all the constraints they face. And they've got perfect information over all future goods and services. So we know what's going to be invented.

There are no spillovers from one firm to another. So nothing like pollution exists or, uh, other kinds of externalities. There's perfect competition. And there are constant returns to scale. So that means that businesses do not have, uh, falling average costs when they get bigger. There are no economies of scale.

And these are just completely implausible assumptions. They were never correct in the old economy. They're even less correct in the new digital economy. But because that's where we start to learn about economics and, and add complexities, it's still the kind of default way of going about things.

So one of my arguments is that we need to flip that around and recognize that we're in a world of imperfect information, loads of spillovers and externalities, very little perfect competition. And think about what kinds of approaches to policy or business decisions is it best to take?

Part of the argument is about the starting point, you know, just shedding some of that training and, and rethinking the curriculum, which I think is really important. But there's another aspect to it, which is what we mean when we talk about economic efficiency. And because of the word efficiency, I think the natural instinct for everybody, including economists is to think that's what the kind of efficiency that engineers mean.

It's, you know, getting oil through the pipe with as little friction as possible, that kind of efficiency. But the economic concept is very different. And it says that if you, um, can make one person better off and nobody else worse off, then you are in an efficient situation. And this is an ethical view. It's not at all an engineering view. But then we use the word efficient. And, and we think that sort of moral characteristic, if you like, of efficiency dominates all the other ethical values you might think of, as you say, fairness, uh, democracy, honor, national pride.

There are many, many kinds of values that we might decide as a democratic society or to, um, be more important than economic efficiency, which is a very peculiar view about how you think about the economic wellbeing of society.

CG: Yeah. I wanna actually give a, a kind of grounded concrete example of this, because I think it also shows how these different values can be in tension with each other. So, in the UK, there's the national health service, which is a kind of undisputed thing, nobody's arguing to sort of dismantle it entirely, right, and go to like a fully

private system or even one that's kind of half private, you know, half socialized, you know, the way we kind of have in the US.

But you wrote that, you know, it's possible that within the national health service, maybe some elements of competition and markets-based thinking could help. In other words, could lead to better overall outcomes, and that people should be open to that. But when some economists actually proposed this, and again, they weren't calling to undo the national health service or to threaten it in any way. They just wanted to introduce some concepts from economics.

A group of doctors and other people from the medical establishment wrote a really harsh counter-attack to the economist and the economist didn't really get a chance in the relevant journal where this happened to respond until they made a loud enough noise about it, right?

Like, there was a lot of resistance to the economics way of thinking because the National Health Service is thought to be not just something that provides healthcare and, and makes it available to everybody and is equitable in that sense. But it's also something that kind of binds the country together, that it is an element of national pride. It is something that is celebrated and that people can point to as something that they have in common.

And so there's all these different competing values, including the economics market-focused values that are in tension with each other. So can you give us kind of a sense of how that works of how we should think about this tension between the sort of traditional market-based approach to economics and the places where it shouldn't dominate, but maybe should still play some kind of a role.

DC: It's a very emotional example. I don't know if you ever saw the opening ceremony of the 2012 Olympics in London, but-

CG: Yeah, Danny Boyle. Beautiful.

DC: And a big segment of that was about how much we love the National Health Service and, uh, with the pandemic, we, we love it more than ever. And so British people are very heavily emotionally invested in the idea of a health service that's free at the point of need and is not run by private corporations.

There's a sort of blurring together, I think, of things being run for profit by private corporations. And it's a perfectly reasonable value judgment to make that you don't want to have a profit motive engaged in that National Health Service and using tools of economics to make it operate more efficiently in the engineering sense, I suppose.

The economists that you referred to had looked at patient outcomes in the NHS, in England, and Wales, and Scotland, where they have diverged and they're running somewhat differently. And within England, there was more what's called

contestability, but competition between hospitals and providers. And the research found that as long as the competition didn't occur about prices, it wasn't about charging people more or less for add-ons, they were competing on quality. Then it did improve quality overall and patient outcomes are better.

So, it would be great if we could somehow take enough emotion out of the debate to talk about when economic tools and insights could be useful to deliver the values that pretty much everybody in the country shares about what kind of National Health Service we want.

CG: Yeah. I wanna ask one final question about this topic of economists seeking to understand society and thereby contributing to changing it. As I was reading your book, I kept thinking back to one of my favorite quotes from another economist named Albert O. Hirschman, who once said, "Whenever a phenomenon in the social world is fully explained, it ceases to operate." In other words, the phenomenon ceases to operate, as we understand it, once we understand it.

And what's kind of beautiful and even poignant about this idea is that the moment we or economists or other people who study society begin to understand society, and finally do understand something fundamental about society, they immediately begin contributing to changing society in such a way that that previous understanding no longer applies. And it's not because they're behind the times or the world changes and they're late to catch up or something, it's because they themselves influenced that very change.

And this is both hopeful and uplifting because it suggests that, you know, things can change for the better. You can possibly make society better, but also a little bit sad because it means you can never quite arrive at a clear, comprehensive understanding of society because the minute you actually do grasp something, it immediately slips through your grasp. What do you think about that?

DC: I suppose I think society is just much too complicated to ever have that synoptic outside of you that we like to pretend that is possible. It's, it's all very complicated. It's reflexive, as you were just describing. And the idea that we are, we are like a natural scientist and put on a lab coat and, and look down to see what's happening and don't do anything to, to influence what's happening is, is clearly just untrue.

And we've been deluding ourselves about that. And I suppose it's a version of the act of observing in itself that will determine the outcomes being observed. So, I know that's a bit of a, a cliché as a kind of uncertainty principle, but I, I do think it applies.

CG: But it, it, it could be no less true for being a cliché, right? And also one that even though people intuitively can grasp it, they don't always, I think sort of incorporate it into their understanding of the world. You know what I mean?

DC: Hmm.

CG: Like they... that's something where people can kind of give lip service to it and then move on and act as if it's not true, even if they themselves, when they think about it deliberately, believe it is true. And I would not single out economists here. I think this applies to everybody, but it's fascinating in the economic context. Because... And this is also something that you talk about that economists do have a special place, a privileged place inside of policy-making circles in a way that other social scientists like sociologists and even frankly, political scientists don't. And so it really matters, you know.

DC: Uh, yes. Um, I, I completely agree with you. You know, political scientists are the last people politicians want analyzing what they're up to.

So, I'm not really very surprised about that. But I think this goes to the whole debate we've been having about experts and their role in society. So as you say not just economists, but other experts too. And although in some ways, as a conventionally trained rationally minded economist, I regret the, uh, disdain for expertise.

It may be that what we get out of it is, uh, social science that is more respectful of, uh, the kinds of values that we were just discussing that differ from economic, uh, analysis, or, uh, simply democratic preferences. So I've... to put me... make that more concrete. I've been doing a lot more qualitative research of late having been brought up to do econometrics all my life. And I think the insights you get, that the salience th- that it, um, reveals about what matters to people is really important. And so we ought to start marrying these different approaches to, um, economic analysis.

CG: Yeah. And that's the perfect segue to a quote from your book, which I had to stop and think about for a while because I find it intriguing and which I also think a lot of people might read and find it somewhat controversial. So here's what you write: "There's a saying that the plural of anecdote is not data. I used to think this was witty. Now I'm not so sure."

DC: Hmm.

CG: You're saying that other stuff matters too, especially when you're trying to understand what causes what? The relationship between one thing that actually causes or influences another thing as opposed to just seeing that a relationship of some kind exists. So, what do you mean by this? "I used to think it was witty. Now I'm not so sure." And it's not just that you don't find it witty, it's that you don't think that it's necessarily even all that insightful or wise either.

DC: I don't think it's, um, I don't think it's very wise. It's a really tri- I think... Now I think it's a very trite thing to say. So let me, let me try and explain that. If you think about the macroeconomy, how, um, in the aggregate do unemployment and inflation and wages and interest rates behave, then, um, what economists are trying to do is

unpick causal relationships. If we put this tax rate up by so much, what will happen to all of these other variables that we care about, like inflation and unemployment?

And so they are looking for what's called in the trade identification, causal identification. And I've got a colleague who refers to the identification police, who are the people in any economic seminar who will say, "Oh yes, but you haven't identified that." So they're looking for causal relationships. They're never going to find them in macroeconomic data because these are variables that don't change very much from year to year. They're highly correlated with each other. There are lots of feedbacks between them. The relationships are nonlinear.

And in a complex system like that, you're never going to find a clean causal relationship between, uh, using this tax rate and doing this to the growth rate. So I think it's a diluted activity. But what you might be able to do is turn to economic history and look at the last time we had stagflation in the late 1970s and see if there are some lessons from that.

We'll see if there are lessons from the spread of electricity in, in the early part of the 20th century. So if you bring in a different kind of insight, you might get a richer view of the, the answer to your question, which is, uh, how do I get growth to go up?

CG: By the way, you also write controversially, perhaps, "I do not believe causality can ever be established econometrically." Which you just essentially restated a second go. But I saw that and I was like, "Oh, Diane's gonna get some emails for that point, right?"

Because I think a lot of people would look at that and say, "Well, that's the ball game, isn't it? I mean, what are we doing here if we can't actually use the tools of economics or in this case, econometrics, which is just essentially the mathematization of economics to actually establish cause and effect. What's the point of all this?"

You're saying, it's not that you can't ever identify cause and effect, or that you can't at least establish the high probability that one thing is causing another thing. You're saying that it's not enough to only use the tools of economics to do so that you have to have a better-rounded understanding of other subject matter, right?

DC: Yes. Why, why do we only have one hammer in the toolkit? Why have we thrown all the other tools in the toolkit away? Which is what we have effectively done by emphasizing, uh, econometric methods. And I do think they're important. You can get a lot of insight from them and particularly in, uh, specific context.

But what economists generally want to do and policymakers want to do is translate things into a different context. And that generalizability is, um, particularly difficult.

And that's where you need this whole array of different approaches to get a, a richer picture and a, and a better understanding.

After the financial crisis, a lot of people called for economists to be more humble. And this for me is what being more humble would look like. And what it, in some cases, seems to have happened in practice is that, um, some economists were a little bit humble for a little while and then said, "Well, now I understand I've learned the lessons and I'm just as confident as I was before."

CG: Yeah. I, I kind of interpreted your book as essentially a 200-page long call for humility.

In other words, that like, what you're trying to do is actually argue against arriving at firm conclusions and you follow your own advice. And I wanna kinda give you one simple example. You write a lot about the traditional argument within economics about positive versus normative economics. So, positive economics essentially is an attempt to just understand the world in objective terms as it is, and not try to make value judgments.

So, just try to measure how the economy's growing or how, you know, different parts of the economy actually work without saying, "That's good, that's bad. We should argue for this. We should argue for that." Whereas normative economics is, you know, the other side of this, which says, "No, you always have value judgments embedded in what you think are objective measurements." And so we should all be essentially pushing for the policies that we want. And we should be transparent about that.

You essentially just try to set the terms of the debate and you don't really come down heavily on one side or the other. You essentially say this is a conversation we should be having. We probably can't avoid either of those two things. We should strive to understand the world as best we can and to be impartial in the data that we collect and in our analysis. But we should also recognize that there is no way to avoid the normative, to avoid injecting our work with our own biases, our own, you know, essentially experiences, our own, you know, set of understanding things which are gonna be inherently biased because we're human beings.

And again, you don't come away with a firm conclusion here. It seems like what you're doing is trying to get people just to think about it more. And so in that sense, like I said, you're following your own advice. You don't think that a firm conclusion is actually warranted here. That's how I interpreted that particular undercurrent that ran throughout your book. Uh, but what do you think?

DC: Oh, I... there's a lot I, I don't know and don't have firm conclusions about which is just as well 'cause it'll give me plenty things to think about for the rest of my career.

I, I, I think the danger moment comes when an economist moves from talking about, "Here's the data, here's my description of the data. I applied these statistical methods to it, and I drew these conclusions and maybe I assigned statistical significance to some of these variables I included. And therefore, action A is better than action B." And as soon as you go into policy advice or business advice, or just saying, um, uh, one outcome is better than another. As soon as you use that word better, then you are in the realm of values, in the realm of the normative. And it's so easy having done all the, uh, sophisticated, econometric statistics to, to make that leap without really thinking about it.

CG: I was also intrigued by something you wrote about the specific macroeconomic variables that we often use to judge how the economy is doing. Here's what you write about real GDP, which is obviously the main number that we usually use to describe how the economy is doing. And also the subject of one of your own previous books, *GDP: A Brief But Affectionate History*. This is something you've been studying for a good part of your career. And here's what you write. "There is no such thing as real GDP out in the world. It is a constructed, not an observable phenomenon. Aggregate macroeconomic variables are ideas." What do you mean?

DC: Oh, I find it really hard for people... to get people to understand this because we are so naturalized into thinking of GDP as a thing. And, um, that you can't, you can't go out and look at GDP. You... It's... You're not measuring it the way you are trying to measure the height of a mountain or any other natural object. Its definitions have changed quite frequently and quite significantly over time.

And there were, in the 1940s when it was first developed, many heated and detailed debates about what should go in and what should go out. So the definitions are ideas. And then the methods of putting it together are, um, you know, like the proverbial sausage, you really don't want to see how they're made because what the statisticians do is mush together all kinds of different goods and services in the economy. They start with the dollars spent on all of these within the definition that they set for themselves.

And, um, then they construct a price index so that they can deflate it to get what's called real GDP, which isn't, um, real at all. And if there is anything real, it's the dollar sum, which economists call nominal GDP confusingly. But, but even that is just, um, a convention and we could decide to do it a completely different way. We could, for example, decide that a lot of economically valuable work is done inside people's homes. They don't get paid wages for it.

Um, but actually, the technology's shifting more and more things back into people's homes. So, uh, doing your own travel agency or online banking or whatever it might be, maybe we should start counting them and we'll figure out the conventions for adding it all up and, uh, constructing a price index and we'll add it to what we now call GDP and we'll call it new GDP. And it'll be a much better definition of the economy than the one we've got. Nothing's stopping it.

CG: Yeah. And I wanna, I wanna actually bring up a couple of specific examples again, uh, of where in the book you describe ways that the indicators that we use now, the economic indicators that we use now, don't always do such a great job of capturing things that really matter, and which are economic concepts themselves, but which are not really well captured in the data.

One is about the topic of time. You know, time is, if you think about it, the ultimate constrained resource, and yet the economic statistics don't do a great job of understanding the specific relationship that different kinds of economics transactions have with time.

This all sounds very abstract. So let me give a couple of simple examples that you described in the book. You know, if you think about the speed at which you arrive at a new place from taking a bus or taking a taxi or whatever, you would think of that as an improvement in productivity. Okay. So if before a bus trip took half an hour and some new changes were introduced, you know, better bus lanes or, you know, better buses themselves or whatever and now you get there in 20 minutes. You would think of that as an improvement in productivity growth, as you should, that's better. Right?

But what about the issue of a nurse spending time with a patient in the intensive care unit? Well, actually, for the same amount of money spent, if that nurse can spend more time with you, you would think of that as a higher value. Something that you prefer, something that you think is better than if a nurse discharges her duties very quickly and says, "Yeah, yeah, I did a quick checkup up on, on this patient and I moved on." As opposed to spending time with the patient in a way that the patient really might value.

So, in that case, you would say that the nurse who spent more time with the patient contributed to lower productivity growth, even though actually what that nurse has done is actually to improve the experience that the patient would get. So I, I think this is kind of an intriguing example of how time is something that is not super well captured in the economics data, right?

DC: I'm really glad you asked about this. It's my favorite subject at the moment. Um, and I'd love to hear people's reactions to it. As you said, we've all got to spend our 24 hours. We don't have to spend all your money, but you've got to spend your time doing something. And you can think about consumers' wellbeing or citizens', people's wellbeing in terms of how they feel in spending all that time.

We know, for example, from many surveys that people hate commuting. So that's, uh, not a good use of time. Um, but they like spending time with their friends. So you could think about that as a way of evaluating how well off society is, a- an interesting lens on that.

And then, um, the productivity story is fascinating because lots of the changes we've seen in how companies are organized and how they produce things in the past 40 years or so have been about saving time in their production processes. We even call

it just-in-time production. That was the big revolution that started in the late 1970s. And that was seen as a fantastic step forward for productivity.

And eventually, that might come through in conventional metrics. So if you can sell more of the cars that you get off the production line more quickly because of your just-in-time production. And if you can hold smaller levels of stocks because of the just-in-time logistics system, then that will get reflected in some way in the, uh, in the figures.

It's much harder when you think about services and there are many services where you'd want them to have the same kind of time efficiencies. Travel is a great example, but lots of routine medical procedures, for instance, you just want to get it over with as quickly as possible in contrast to the intensive care nurse you want to look after you.

If you think about it in this way, then there are productivity gains to be made in all kinds of routine goods and services from saving time. So that's one classification. But then there's this whole other arena of economic production where there's a quality angle that we really don't know how to capture. Think about buildings. Construction has seen very little productivity growth in any country for a long period. But if we see construction happening at the same pace, it always did as, you know, as slow as ever it was. But what we get out of it is more energy-efficient buildings and, um, fewer carbon dioxide emissions down the road.

How are we going to treat that? How are we going to capture that quality gain? Should we think about it as getting more output for the money that's put in or as a lower price? Or how do you even measure building quality in, in that sense? So I'm playing around with these ideas at the moment. But I think we've just not paid enough attention to the ultimate scarce resource.

CG: Yeah. And I thought of another example that is way more frivolous, less meaningful than the examples that you just brought up. But which I think also captures a difficulty of understanding just how much people's lives are changing, improving, or getting worse in some cases. Uh, how much harder it is to understand that because of the rise of digitization and the difficulty of measuring things in the digital era, which is in terms of streaming services, um, you know, I, I was thinking about how right now, instead of watching a movie at a theater, let's say you go online and you buy it on Amazon Prime, or you rent it on Amazon Prime for \$20. And you think of two people who rent the same movie. One person kind of likes the movie, watches it once, thinks, "Yeah. Okay. That was good. It was worth the 20 bucks, but I don't need to see it anymore."

A second person loves the movie. And in that 30-day window, in which you can see it as many times as you want, watches it like four times because they loved it so much. Well, in the economic statistics, those two things are gonna come across as exactly the same. You know, \$20 were exchanged in both cases for the same access to the same movie, but there were two completely different varied outcomes in terms of

how much value people got out of it, how much value two different people got out of it.

And if you think about it, this kind of thing is happening all the time and in massive scale. And it just becomes very difficult to understand how something like that even can be captured in the data. What do you think about that example?

DC: It's a great example. And, you know, the puzzle is that all, all bytes of data are the same. You've got a zero or you've got a one. And yet the value people attribute to them is, um, is very variable. And the more personalization there is, um, the more you're talking about goods and services, where choice matters, books, music, uh, streaming videos, then the more this is going to be a problem.

CG: Uh, I wanna bring up inflation now because this is obviously something that is timely. A lot of people right now are worried about inflation because it is higher than it had been certainly in the years and actually [laughs] the decades before the pandemic. And you use inflation as an example of something that's very difficult to understand as one variable, as one thing that actually it's many different things.

And you write that it is not a "uniquely identifiable indicator." And then you also write "identifying cause and effect or any stable relationships between variables in this context is I believe impossible." That's a fascinating idea because we all gravitate towards like the one number that we wanna use. You know, inflation is up 6% over the past year. You're saying here that actually not only is inflation many different things, but that it's impossible maybe to actually understand the specific causes of all these different kinds of inflation. Uh, so tell us more about that.

DC: The number that we all talk about is an inflation number constructed in a particular way. And a lot of effort goes into it by the agencies and they use sophisticated methods to collect lots of different prices, lots of different goods, lots of different places and create, um, a representative basket. What does the average person spend their money on? And what are the prices of those goods? How do you weigh them together? And how does that change over time?

And there are, I think three really big problems. One is that there are new goods all the time in the economy. And so somehow you've got to, uh, bring those into your index. And over short periods of time, it's okay because a new good might be a reasonable substitute for, uh, something else. So the first mobile phones you could consider to be a reasonable substitute for the fixed telephones that we were all using before.

But then when you want to compare today's smartphones, which are pocket-size computers with amazing functionality and all kinds of apps on them with a phone price a long time ago, you're not really comparing like with like when you compare that to the fixed-line telephone. So, taking account of innovation is really difficult.

How do you do that? And it makes it very hard to compare prices over long enough periods of time that the innovation is quite significant.

A second problem is about quality change. And if you take an example like your phone or a car, the quality of the vehicle that you buy is improving constantly. So if I want to compare today's vehicle with a vehicle five years ago, I need to take account of the great fuel efficiency, the improved, um, security, the ability to, um, download the software that tells you where you are, the GPS software direct into the car, um, all of these things.

And somehow you need to account for that quality change in thinking about how much benefit are consumers really getting? You know, what's the real benefit they're getting once you've adjusted for the price, the price change? And that's really complicated as well. And it means that you start to ask yourself, "Well, am I really asking for the price of a car, or am I asking about the price of getting from A to B in a certain way? And, what does that imply for the price index I should be looking at?"

So there are some examples of constructing the price of a, a lumen of light Bill Nordhaus did this over many, many, um, decades or centuries even. It's the light that is the thing that you're buying, not the oil lamp versus the electric light versus the flashlight.

And then finally, there's the issue about who... which people are you talking about? Because the representative consumer is not a real person and people have very different levels of income and very different spending patterns that go with those levels of income. Many statistical agencies now adjust quality, adjust the price of things like smartphones or, um, laptops a- and tablets, uh, to take account of the improvements and... that they show that the price as calculated has been falling, uh, much faster than the official index might show. But the price that you pay hasn't been. You still gotta buy a \$2,000 laptop even if you're getting much more quality in the laptop that the index adjusts for.

And so for low-income consumers, the fact that they've got a very different basket of goods that doesn't have really very many smartphones and high-end laptops in it is very important. And when you've got structural changes in the economy like this, the assumptions that underpin a, a sort of average price index are just not valid. And you need to think about inflation of a different groups of people.

CG: Yeah. That last point strikes me as incredibly important, especially right now where you can't just look at the different kinds of inflation and how it affects different groups of people, but also how quickly their wages are growing. You know, are there wages not adjusted for inflation, you know, outpacing inflation itself? Which means that some groups within society might actually have their situation improving, even if some aren't and that should go into the value judgment of how policymakers should respond.

And so, in a way, what you've just described kind of shows how inflation is unavoidably a political topic, you know. And I, I could see an economist kind of reasonably saying, "Well, look, I'm just trying to explain inflation. I'm trying to come up with a useful way of describing it. I'm trying to simplify it." And that's all understandable.

But because inflation itself is also used as an input into how policymakers make decisions about what to do about the economy, it is political. That doesn't have to be a dirty word by the way. It's just a fact of life, you know. And not just in the short term, but in the long term, for example. Government benefits and how quickly they rise over time, that sometimes also is determined by which kind of inflation measure is used. And so that can change.

And so in a way, uh, it seems naive to turn away from the idea that inflation is, in fact, a political topic and not just an economic topic and economists and economic analysts and journalists and others really should understand that and kind of consider its importance when they think about it. And I use inflation as one example, I think it's a really important example, but there are others. And I think it's a really interesting prism through which to understand just why it is that the political is something that economists and analysts and journalists and anybody who tries to understand societal changes just can't avoid, can't turn away from.

DC: Another example I really like is, um, the discount rate used to judge what kinds of projects, uh, should be invested in both by businesses and, and by governments or, um, the costs and benefits of different courses of action over time.

CG: The discount rate is essentially how we value the importance of certain outcomes for people in the future, as opposed to in the present.

DC: It's exactly that. It's about how do you value the future compared to the present? And so literally in cost-benefit analysis, uh, or, uh, project analysis, we will discount the future. We will say that \$100 today is worth less than this in the future because we value things that we can spend it on much more today. And that's an incredibly strong value judgment.

The way that governments tend to think about it when they recommend a rate to use in a policy analysis is as, uh, what's called the pure rate of time discount plus a term that reflects what future... what growth is expected between now and the future. And so the growth you can see, if people are richer in the future, they'll be able to afford more things. So maybe we, we can discount their, their future money a little bit for that.

But the first part, that pure rate of time preference, that's really, do people in the future matter as much as we do? Or do we just write them off a little bit because we care more about ourselves? And, um, when I try this formula out on students, the

students are always very clear that that term should be zero. We give equal moral weight to people in the future as, as we do to people in life today.

And, uh, yet that has not typically been done. And it's become obviously a very live issue in the debate about, about climate change. And how much should we spend now to avert future climate change? Well, it depends on what growth is going to happen, but also, do we care about people in the future? And we are fa- we're facing that choice now.

CG: It's fascinating. You can even think about this somewhat cynically in the context of an abuse of power, which is that present people obviously have the power to dictate whether or not they privilege themselves versus privileging descendants, people in the future. And we, as the people living in the present, essentially abuse that privilege to help ourselves at the cost of people in the future.

Uh, there, there's a tricky philosophical back and forth you could do on this topic, uh, and it's utterly fascinating, but that's, that's sort of what I thought of as, as you were going through that example of how kids intuitively grasp it. And we as adults sometimes struggle to actually apply it, you know.

DC: I think that's a generation change. I think that the young co- the, the cohorts coming through now, today's young people actually have quite a different set of values. Uh, perhaps it's just the inevitable reaction to the mistakes the generation before them made.

CG: Diane, I wanna close by asking you about how we should understand the digitization, the widespread digitization of the economy, uh, specifically with regards to how it affects our understanding of the world because it has enormous implications. You know, you start by saying that we have gone from a world in which there are more linear relationships and linear outcomes, which are very easy to measure to a world in which there are non-linear outcomes, which are very difficult to measure and from a kind of static understanding of the economy to a more dynamic understanding of the economy. So why don't you just, uh, kind of guide us through those concepts?

DC: The, the characteristic pattern of growth for digital platforms is that it starts out being pretty slow and they'll often lose a ton of money to start with, but they get to a critical point where they grow very quickly and come to dominate their market. They're called winner-take-all markets. And that's partly because of increasing returns to scale, which we've always had in the economy. They're just particularly big in digital.

It's partly because of what are called network effects. And that means that the more other people are using a digital service, the better it is for you. Every new user benefits all the existing users. And that's a very powerful amplification. So we've got these very big tech companies. They also make their own technology decisions. So

they will, um, choose certain technology protocols or they'll get as used to doing things in certain ways.

And so that's what's called in the jargon past dependence that, uh, the society evolves to have a certain set of habits and, and technologies and, and technological standards. And what that means, first of all, is that you can't analyze a snapshot of a market because it's going to depend on where you are in that evolution. Are you in the flat bit? Are you, um, in the bit where it's starting to change very sharply? And it makes it hard to predict what will happen to markets over even relatively short periods of time.

This is a problem in an area like competition policy, where a lot of the evidence that gets gathered is retrospective. How have companies been behaving? And the decision-makers, the economists will try to project that forward a year or two, but it's much harder to do that now. And, um, in fact, any choice that they make, will they let a merger go ahead or will they stop it? Will they intervene to tackle market power or not? Is going to shape the outcome of that market, whether they decide it, or don't decide it.

And that's very uncomfortable for economists and competition authorities because they used to, you know, looking, looking down from their scientific, um, on high perspective at a given market and doing the analysis and drawing a conclusion. And now, whatever they do, whatever they decide, they're going to shape the future of that market.

So to give a- an example, I was the, um, eight years or so, uh, trustee of the BBC. And one of the proposals was between the BBC and other public sector broadcasters in the UK to create a long-form video platform. This was in 2009. It had been planned earlier, but the case was heard in 2009. And the competition authority at the time, um, banned the joint venture and, what's more, said they couldn't even go back and revisit it for another five years.

And the argument was that they had so much great content between them, that they would stop any other company getting into the market, which I think misunderstood the incentive of platforms to attract viewers, you attract viewers by having as much content as possible. So they would've been happy to have competing content on this platform. But never mind that. Five years in, uh, a couple of years after that, Netflix had entered the market and is now the biggest broadcaster in the country. And so that decision on a conventional basis actually shaped the market decisively in probably a completely unintended way.

CG: Yeah. And in addition to this more dynamic understanding of the world in the digital era, you're right that in the modern economy, some things that were in the past regarded as exceptions within economics are now kind of the default, like the idea of externalities, spillover effects were essentially some kind of economic activity

ends up having big effects on something that seems unrelated, but that actually is tremendously influenced by that economic activity.

And I, I just wanna get some sense of what you mean by that, that, that, like that is now kind of the default rather than the way economics used to model that, which is as the exception and therefore something that can simply be dealt with by policymakers. You know, if, if [laughs] you allow for a free market to happen, you see that a lot of pollution is created. So you put a price on the pollution and boom, very neatly, you have sorted for that negative externality, right?

Now, essentially, externalities are happening everywhere, which suggests that it's just too hard for policymakers to keep up. Um, what do you mean by this idea that externalities are now the default, rather than the exception?

DC: They just appear wherever you look. Network effects are an example of, um, one person's decision affecting outcomes for other people. Um, there are good examples, um, as well in new technologies. If you think about how the price of photovoltaic cells has fallen far, far faster than anybody thought possible, then this has come about because of scale, because as producers have individually scaled up, the scale effects on the market as a whole, and, uh, the fact that it's a global market means that the price decline has been well beyond linear, it's been in a highly nonlinear price decline.

And scale effects are everywhere in the economy. They're in the old economy, in airplanes and automobiles, and they're there in the new economy where the upfront cost of writing software or building the platform is really high. And the marginal cost of serving another consumer is practically zero.

And these are, um, you know, so every- everything that gets produced involves externalities of this kind, as well as the, the classic ones like pollution way you just say, let's put a tax on it and we'll reduce the amount of that activity. These are woven into the fabric of the economy. They're not side effects.

CG: Yeah. And this more kind of fluid, more dynamic world has also had an influence on the relationship between the government and the private sector. And especially in trying to figure out this is where economists come in, the appropriate roles for the government versus the private sector. And here's what you write, "The circumstances in which markets fail are exactly circumstances in which governments fail too because they are exactly the circumstances when private and collective interests diverge the most."

And I wanna be clear in that sentence, you're describing the new world, right? That we have to now transcend previous economic debates about what the government should do versus what the private sector should do. That actually, that relationship maybe needs to be more complimentary than it was in the past because what you have now is the effects of how markets work now in the digital era on institutions, generally, whether they are government or private sector institutions. So I'd love to

close with your thoughts on this idea and what you think it means for the role of economists in trying to understand the world now.

DC: Governments have always set the rules for markets and, um, the idea that they were completely separate was for the birds anyway.

So, so the point about the quote is that situations like spillovers or asymmetries of information are, uh, difficult, um, it's difficult to design markets that will work well, and it's difficult to design government institutions that will work well because they're just inherently difficult situations. And if, um, one person, one party to a transaction knows more than another, that's, that's a problem however you approach it.

But I would love us to get away from the idea that it's either government or markets, which was the sort of 20th-century debate. You know, should we nationalize or privatize? Should we have a socialized healthcare system or a private healthcare system? And we're going to need a mix. Uh, we have a mix anyway. The two just need to operate together for, for the common aim of making people better off over time, whatever, whatever better off means.

The capitalist system for 250 years has delivered increases in life expectancy, better health, um, more comfortable lives, uh, all kinds of amazing new technologies. And, um, it, it doesn't seem to be working that well at the moment because whatever arrangements we had in place, the structure of the economy, the technologies have changed in ways that make it not very productive anymore.

And so we need to figure out how to start from thinking about the right institutional mix in any context. If we think there's a problem, what kinds of institutions would be able to address that collective problem? And is it going to be organized by, uh, market prices, decentralized signals, or by some kind of public intervention, a centralized, collective signal or something else entirely? Mutuals? Uh, institutions we haven't even thought about yet?

And I, I strongly feel that the kind of technological shakeup we've had means that actually new kinds of institutions will be needed as well. Uh, maybe they'll be decentralized on the blockchain. I, I don't know. But just as the V- in the Victorian era, we saw mutual saving societies and, uh, friendly societies and, uh, libraries and art galleries and town halls, and this immense flowering of new approaches to creating a better life and a better country. But that's the kind of in- institutional innovation and ins- and innovative thinking about how to solve these policy problems that we need now.

CG: Final question, Diane. As somebody who studies the process of economic policymaking, and also the methodology behind economics itself and how it changes over time, we're now, you know, about a year and a half into the pandemic. Uh, how do you think economists and economic policymakers, in particular, have done? Do

you think they've risen to the occasion as you would have hoped? Uh, or are there some areas perhaps where you think they've utterly failed? Uh, how are we doing?

DC: Generally, I think economists have done pretty well. There was right, uh, away in March, 2020 a huge effort by economists to start trying to understand the situation and what might be done about it. And you could point to areas like furlough schemes and figuring out what would be effective in getting money into people's pockets, or, um, supporting jobs.

You could point to the way that economists after a little while, got together with epidemiologists, start thinking about modeling, uh, together the course of the infection and, and, and the course of the economy. So there were lots of good things.

I guess the thing that troubles me is the emergence just more recently of the kind of old macroeconomic debate, where there's just this sort of dual between people who say, uh, inflation is temporary and people who say, "No, no, it's a permanent upward shock to inflation." And they're all equally certain that they're right about it.

And I think the only sensible position to take about the questions like that is, um, we're going to keep a really close eye on and see how it evolves. But at the moment we just don't know, we can't foresee. And that future depends on what we do and, and what happens next. It's, it's I think, uh, radically uncertain.

CG: Did writing this book make you more hopeful or more pessimistic?

DC: It varies on how well I slept the night before, I think. It could go either way.

CG: Fair enough. Diane Coyle, thanks so much for being on The New Bazaar. This was great.

DC: Thank you. That was a great conversation.

CG: And that's it for this week's show. We are gonna post a link to *Cogs and Monsters* and to Diane's really wonderful blog in the show notes for this episode. The New Bazaar is a production of Bazaar Audio from me and executive producer Aimee Keane. Adriene Lilly is our sound engineer. And our music is by Scott Lane and DJ Harrison of Subflora Studio.

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