

Joe Ravetz

2020-06-18 00:38

International Smart City Summit
WORLD ARTIFICIAL INTELLIGENCE CONFERENCE

'CHAI' **(Collective Human Artificial Intelligence)** **& the pathways from smart to wise**



来源：世界人工智能大会官网

Joe Ravetz 是曼彻斯特城市学院的“未来城市”项目的主题负责人，具有远见和创新。作为曼彻斯特大学城市弹性合作研究室担任联合主任，他致力于智慧城市，环境/气候政策和经济发展。因此，他开发了协同技术方法，用于在技术，经济，城市和政策系统中与“集体智慧”一起使用。他的主要出版物包括“2020年城市区域”，“环境与城市”和“更深的城市：集体智慧以及从智慧到明智的道路”（Routledge 2020）。

他曾为政策提供建议（工发组织，人居署，雷焦总督，欧盟议会和欧盟委员会，英国政府和机构），并曾担任欧盟智慧城市与社区平台的联席主席。他还是伦敦 SAMI Consulting 的负责人。当前的项目包括“全球智慧城市”，城市/郊区的气候适应力，地方共同治理和低碳转型。

Please to meet you. I I'm in Manchester, UK. My name is Joe Ravetz. I lead on the future cities theme at the Manchester urban institute. I would like to share to you today some recent work on smart cities and smart to wise cities. What does this mean? How do we do it? Why is it so important? And to explore some of the background to that, I would like to share with you some researches on the extension of artificial intelligence to a bigger word, try collective human artificial intelligence. What does this mean? How do we do it?

很高兴见到大家。我现在在英国曼彻斯特。我叫乔·拉维茨（Joe Ravetz），在曼彻斯特大学的城市学院主持未来城市的科研项目。今天，我想和大家分享一些关于智慧城市(smart city)和智慧-智能城市(smart to wise cities)的最新研究成果。这些词是什么意思?我们应该怎么做?为什么这个议题如此重要?为了探究其中的一些背景，我想和大家分享一些研究，这些研究从人工智能延伸到一个更大的词，人类集体人工智能。这是是什么意思?我们该怎么做呢?

So in the next few minutes, I would like to share with this through the medium of pictures and pictures is something I use on the site all the time. I find it very useful for exploring ideas which are beyond the normal range of logical scientific thinking. I hope you enjoy the presentation. I would like, firstly, to introduce my clients, these are little boys in poor area of Manchester. Their objective is to be happy. But this is not so easy. And first I'll talk about the context, what is this smart to wise thing?

在接下来的几分钟里，我想通过图片这个媒介来来大家进行分享。图片是我在网站上经常用到的东西。我发现图片对于解释超出普通科学逻辑思维范围的想法非常有用。我希望你喜欢这次演讲。首先，我想介绍一下我的案例对象，他们是曼彻斯特贫困地区的小男孩。他们的目标是快乐。但是做到这一点并不容易。首先我要讲一下背景，从智慧城市(smart city)和明智城市(wise city)讨论的到底是什么?

Then now tell you about the theory of collective human artificial intelligence. Then I'll look at a quick global example. A smart-wise cities in India, and then some ways forward. We then have the context. And this kind of thing is happening more and more in the UK and Europe. The robots apparently are running the place. They are running the factories and shops and the public services. People are getting very angry. They have no jobs. They cannot get in. They are the wrong kind of people.

接下来我会介绍集体人工智能的理论。然后我会快速讲一个全球的案例，一座印度的智慧-明智型城市，还有一些继续探索的方向。这样我们就理解研究的背景了。类似这样的事情在英国和欧洲越来越多。显然是机器人在管理这些地方。工厂、商店和公共服务都使用机器人进行运作。人们变得非常愤怒。他们找不到工作。他们无法进入一些行业。他们不是社会需要的人。

And the robots only know how to follow the rules. So this is the kind of background. And then we say, ok, this is in the program abstract. We know that digital innovation can only work within

the structures created by humans. So we have to talk about the collective human intelligence. Manchester, for example, my city is a pioneer in digital cities, smart cities. For 30 years. But in that 30 years, we also have more people who are hungry, homeless, not educated, depressed, insecure, and so on.

机器人只知道遵守规则。这就是我们的研究背景。有些人可能会说，我们知道，数字创新只能在人类创造的结构中发挥作用。所以我们必须谈谈人类的集体智慧。以我所在的城市曼彻斯特为例，曼彻斯特作为数字城市和智慧城市的先驱，已经引领潮流 30 年。但在这 30 年里，曼彻斯特有更多的人挨饿，无家可归，没有受过教育，沮丧，没有安全感，或者出现其他等等问题。

So we have to ask the question, what is AI doing? what a smart city is doing? If AI replaces the humans in 50% of all jobs, what is the livelihood or quality of life for them? So this is really a question not only about technology, but a bigger kind of challenge, a smart wise city. And in this we are all beginners. I studied this for 10 years. I'm a complete beginner. Then we have to put this in the context of the coronavirus and we did some futures work.

所以我们必须问这个问题，人工智能在做什么？智能城市在做什么？如果人工智能取代了人类 50% 的工作，这些失业者的生计怎么办？他们的生活质量怎么样？所以一座智慧的城市不仅仅是关于技术的问题，而是一个更大的挑战。在这方面，我们都是初学者。我在这方面做了 10 年研究，依然是个初学者。然后我们必须把这些问题放在新冠病毒疫情的背景下，对未来进行考量。

And this is relevant because we have to say, where is the smart city going in this context? Is it trying to keep society just as it is? If the pandemic continues, the future is not just great. If we solve the pandemic, then we go back to high pollution, high climate change, high inequality, and so on. So is there a new kind of transition to be made? This is stay the background. Then we say, okay, which are the systems, which are going, which are rising at the moment through smart technologies, smart AI, digital systems in general.

疫情和我们的议题也是相关的，我们必须问自己，在这种背景下，智能城市将走向何方？智慧城市是不是能保持社会原来的样子？如果新冠疫情持续下去，未来不一定更美好。如果我们解决了新冠病毒，我们是不是会回到污染程度高、气候变化大，社会不平等眼中的老路上去？那么，是否存在一种新的社会转型的可能？这是我们议题的背景。然后我们来判断，哪些系统正在通过智能技术蓬勃发展，一般来说，是人工智能，以及数字系统。

Which of these are smart and which are unsmart? You can see there are many examples. These come from my private, by them, my London consultancy, sany consulting. And we can also see on the left hand side, the rich seem to get richer and poor seem to get poorer. This is not so great. So again, we have to ask some hard questions. And then we say, okay, why is this most urban problems on most urban public systems? There are complex interconnected, just like the humans. Most technology has simple functions, its purposes are defined.

其中哪些是智能的，哪些是非智能的？你可以看到有很多例子。这些来自我位于伦敦的咨询公司。我们可以看到，左边，富人似乎越来越富，穷人似乎越来越穷。这可不太妙。所以，我们要问一些棘手的问题，为什么这些城市中的问题会给城市的公共系统中带来压力？就像人类一样，这些问题之间有着错综复杂的相互联系。而大多数技术的功能简单，目的明确。

So there is a gap, the smart technology for functional systems. But other parts of the human condition are equally important. So we have to find ways to put these together. Not only technically smart, but there is a big challenge. If we look at the theory, we can start with systems analysis, information theory, signal processing theory, and so on. We can start to track how smart systems, such as, for example, transports and housing e-shopping and so on, how these work and would say, ok, so the smart system is very efficient. It's very smart. But it has effects. It's actually, it avoids paying the tax. It exploits the workers, it disrupts other public services, and so on.

所以功能性系统的智能技术存在缺口。但人类状况的其他方面也同样重要。所以我们要想办法把它们放在一起。不仅要做到技术上智慧，也要能应对巨大的挑战。在理论体系上，我们可以从系统分析、信息论、信号处理理论等角度着手。我们可以开始追踪智能系统，例如，智能交通，住智能房，电子购物等等，看它们是如何运作的，我们会说，好的，智能系统的确非常高效，非常智能。但智能系统也会产生影响。实际上，很多智能方式避免交税，剥削工人，破坏其他公共服务。

And then we say, is there an alternative? The wise system? How would this work? Would the profits recirculate inside that city or inside that business? Would the workers be owners of that business? Can we integrate it with public services? And just a cartoon to show this. Well, here is somebody going shopping. He wants a taxi, a pizza, a beer, a movie, a date, all these things you can now get online with one or two clicks.

人们不禁要问，那我们还有没有别的选择？比如明智系统（wise system）？它如何运作？产生的利润会在城市或企业内部流通吗？工人们会成为企业的所有者吗？我们能把它和公共服务结合起来吗？这是一幅卡通画。这是一位购物者。他想要叫一辆出租车，点一份披萨，喝一瓶啤酒，看一场电影，进行一次约会，这些东西你现在只要在网上点击一两下就能获得。

He wants them now and he cares nothing for anyone else. It's all about personal, selfish gratification. And then we say, is there an alternative? Is there a wise kind of place where you go shopping? We can talk about the local food for about the community, the local circular nomics, where materials and waste go round and round. There is zero pollution, and so on. On the left, we also talk about the homeless people on the street, just outside the supermarket. So this is a little cartoon.

但是他现在就想要这些东西，他对其他人毫不关心。这些是他个人的，自私的满足。然后我们可能要问，有没有别的选择？有没有一个明智的购物场所？我们可以谈论当地的食物，社区，当地的经济循环，材料和废物的回收利用、零污染，等等。在左边，我们还谈论了在超市外面的街上无家可归的人。

And then we said, ok, what is the theory behind this? This is a longer thing which I would just go through briefly. We can start to analyze the systems and look for the transactions between buyers and sellers in the market place. Each part has low mutual enough information. In the analog pre-digital system, we look for the supply chain, the value of supply and value chain. And then we look for the system where all of these things are combined, the system here. This is an overview of pre-digital analog systems, right?

然后我们可能要问，这背后的理论是什么？这说来话长，我只能简单讲一下。我们开始分析整个体系，寻找市场上买卖双方的交易。通常来说，交易双方对对方所知甚少。在模拟系统中，我们寻找供应链、供给价值和价值链。然后我们寻找把这些组合起来的系统。这是对数字系统产生之前的模拟系统的概述。

Then we said, ok what about the smart system? And in the smart system, and there are many all around you, Uber taxis, eBay, these are the Chinese equivalents for these. then the market is networks. The high mutual information. The buyers know about the sellers, the sellers know about buyers. It's a very, very efficient system. But, there is weak, there are impacts on the community, on the workers, on the tax, for the public services, and so on. And if we multiply up to the system's view, all of these things are connected by time, place, person, etc.

那么在智能系统中交易会变成什么样呢？你周围就有很多智能系统的交易例子，比如优步出租车（Uber），易贝（eBay），这些东西在中国也有同类产品。在智能系统中，市场就是网络，这样的交易发生时互信息量很高，也就是说买家了解卖家，卖家也了解买家。这是一个非常高效的系统。但是，它对社区，对工人，对税收，对公共服务等等都有影响。如果我们从系统的角度来看，所有这些都是由时间，地点，人联系起来的。

The outcome is a functional system, which is only as good as the humans who designed it and use it. If those humans are excluding minorities, women, ill people for all sorts of reasons, then we have a problem. There's a social problem. So again, we say, ok, what is a wise system? We look for a wider kind of mutual information in signal processing theory. We look for high feedback all around the cycle. We look for multiple extended value chains which are connected around the human side, not only the technology side.

其结果是一个功能系统，这个系统应该是很好的。但是如果这个系统的设计者和使用者出于各种原因，将少数民族、妇女、病人排除在外，那么我们就有麻烦了。因为这会产生一个社会问题。所以，我们再重申一遍，什么是明智的系统（wise system）？我们在信号处理理论中寻找更广泛的互信息。我们在整个周期中寻找高反馈。我们寻找多个延伸的价值链，它们围绕着人的方面方面展开，而不仅仅是围绕技术方面展开。

So these are big ideas. How do we do that? We also talk about learning in the analog and in the AI sense. And in the collective human artificial intelligence sense, the machines have to learn with the humans. The humans learn with the machines. It's not an easy thing. But here we are. We have to do it. And then some examples from the taxi service. This is Uber and then some examples from the housing or accommodation service. This is airbnb or the Chinese equivalent. Again, we have to say, okay, how do we get the arms? The smart towards the wise.

这些想法很好。但是具体应该怎么做？我们还讨论了在模拟系统条件下和人工智能背景下进行学习。从人类集体人工智能角度出发，机器必须与人类一起学习，人类也必须和机器一起学习。这不是一件容易的事。但现在我们必须这么做。然后是一些出租车服务的例子。这个例子是优步（Uber），其他是一些住宿服务的例子。这是爱彼迎(airbnb)，中国也有类似的服务。我们又要问了，好吧，那么怎么才能从智慧走向明智（The smart towards the wise）？

So this is a long story, which there is a book about this, which I can mention at the end. And then we look at how these systems combine in a real city. This the technology, the business, the ecology, the communities, the government, culture, and the heritage. All of these things need to fit together. It's a big project. We also talk about the phrase in Europe and OECD and similar places. It's smart, inclusive cities, spaces of opportunity. So first we say, ok, the smart mean, all these very, very, very clever things. The social inclusion means we try not to create inequality.

这又是说来话长，我写了一本关于这方面的书，会在演讲最后提一提。然后我们来看一看这些系统是如何在一个真实的城市中结合起来的。这包括技术、商业、生态、社区、政府、文化和传统。所有这些东西都需要结合在一起。这可是一个大项目。在欧洲、经济合作与发展组织和类似的地方也经常谈论这个短语。这是一座智慧而又包容的城市，是充满机遇的空间。首先，智慧指的是非常非常的聪明。社会包容意味着尽量不产生不平等。

We use the smart systems to help equality, learning, education, human quality of life etc. And we also look to develop the city, the urban development, where these circles go over each other, then we have the areas with most interests. And there are many examples to look at. And we also have a problem with words. What are the words that we need to describe these models in the middle. Shall we call it a social-enterprise-geo-located-value- chain? Or an eco-service local global cultural co-creation.

我们使用智能系统来帮助实现平等、学习知识、获得教育、提高生活质量。我们也希望发展城市，这些圆圈相互重叠，就产生了我们有最感兴趣的区域。这方面有很多例子。在文字叙述方面也有一些问题。我们需要用什么词来描述中间的这些模型。我们是不是可以称之为“社会企业地理位置价值链”，或者“生态服务，当地的全球文化共同创造体”？

Who knows? We have to create new words for these things. One example from smart, wise cities program, and this is from India Bhopal as well as one of the leaders of the hundred smart cities in India. And I mentioned I bring in India, because in many ways it's easier to see than if I look at the UK, in the UK, we asked we have a lot of technology. It's not easy to see what is going on in India. It's a different development story, as you can see.

总之我们必须为这些东西创造些新词。还有一个智慧-明智城市项目的例子，来自印度博帕尔市，这座城市是印度 100 个智慧城市的领头羊之一。我提到了印度，因为在很多方面，印度比英国更容易分析，在英国，我们有很多技术。但要看清印度正在发生什么并不容易。正如你所看到的，印地的发展故事是不一样的。

So then we can say, okay, how do we design these collective human artificial intelligence systems to work with the smart city of Bhopal as well in India? And the short answer is we draw a lot of pictures. We get the people around the table. We say, so you're a taxi driver. Fine. You're a bicycle rider. Great. You are a shopkeeper. You're an ordinary person, and so on. Or maybe I'm a millionaire. I own big departments block. And then we start to look for the connections between these different people.

我们又要问，该如何设计集体人工智能系统来与博帕尔和其他印度的智慧城市合作呢？简而言之，我们画了很多图。我们让人们围坐在桌子旁。我们与人们交谈沟通：你是出租车司机。你是个自行车骑手。你是店主。你是一个普通人。或者我是个百万富翁。我自己的百货店大楼。然后我们开始寻找这些不同的人之间的联系。

This is a process. It can go on for a very long time. There is no fixed answer. Because there is always more to talk about. And then we start to say, okay, so how does the system work if we are using an Uber in India? That's great. The taxi turns up it knows where you are. The driver is safe, usually. And so what could go wrong then? We said, ok, so the a system which we have invented has different effects, which we didn't think of. And then we can start to explore what is really important. And these pictures come from a workshop in India last year.

这是一个过程。这个过程可能会持续很长时间，而且没有固定的答案，因为总有更多内容可谈。然后我们开始问人们，如果在印度使用优步，这个系统是如何运作的呢？比方说出租车来了，它知道你在哪里。司机通常是安全可靠的。那么会出现什么问题呢？我们发明的系统有不同的效果，这是我们没有想到的。然后我们就可以开始探索什么才是真正重要的。这些图片来自去年在印度的一个研讨会。

And they wanted to talk about smart people and a smart city and smart technology. But the smart people was at the top of the list. So here we have a systems thinking about culture and heritage. Here we have systems thinking about slums and the renewal of the slum areas, informal settlements. And here we have a system about the waste. And here we see a picture of the waste system from the smart point of view. And then the question comes up, how about a system from the smart, wise points of view?

研讨会上大家想谈智慧的人，智慧的城市和智慧的技术。但是智慧的人是最重要的。因此我们要对文化和传统进行系统的思考。我们有对贫民窟以及贫民窟地区非正规定居点的翻新和整治进行考量。这里有一个废物处理系统。这是智慧系统中废物处理系统的图片。然后问题就来了，从智慧而又明智这个角度出发，我们应该建立怎样的垃圾系统？

Because we could say with the smart system, it was very efficient picking up the waste. But there was no incentive to make less waste. We have to think again. So let's think about a smart, wise waste system which is completely integrated into the community, into the culture, into the ways that the household cooks their food, and so on. And there's the poster from the waste workshop. So these are just very quick examples. We can then start to get more analytical. And what is the smart thing? What is the unsmart thing?

我们可以说，有了智能系统，处理垃圾的效率非常高。但是人们并没有产生减少垃圾的动力。我们得再想想其他办法。也许我们可以设计一个智慧而又明智的垃圾处理系统，这个系统能完全融入社区，融入文化，融入家庭烹饪食物的方式。这是垃圾处理研讨会的海报。这些都是简单的例子。我们可以进行更多的分析。智能是什么呢？什么是非智能呢？

What could be a smart, wise thing for each of these different people involved: the governments, the workers, the customers, and so on. We are also working with an international firm, IBI consulting, who created some of this smart city program. And we found they are thinking along

very similar lines from the city of individual bits and pieces on the left to an interconnected thing, and then all the way to a responsive and resilient city on the right. How does this work in detail?

对于参与其中的不同的人，政府，工人，顾客等等，什么是智慧而又明智的呢？我们与跨国企业 IBI 咨询公司进行合作，该公司开创了 this 智能城市项目。我们发现他们的想法非常相似，他们从左边城市的点点滴滴角度思考，进行相互关联，最后形成右图这样一座反应敏捷、富有韧性的城市。其中的细节如何？

We have to talk about it. We are all complete beginners here. Then we can get more analytical. And let's look at different cities around the world and start to track exactly what is going on. And this is a big project which was only just beginning. But I want to let you know maybe we could come to China and analyze what is going on in China. That would be a wonderful thing to do. I already have a project in China, in Guangzhou. Then we say, so what do we do?

我们得讨论一下。我们都是彻头彻尾的初学者嘛。然后可以进行更多的分析。让我们看看世界上不同的城市，看看到底发生了什么。这是一个刚刚开始的大项目。但是我想也许大家可以去中国分析一下中国正在发生的一切。这一定是非常棒的体验。我已经在中国广州搞了一个项目。我们该怎么做？

Now this one comes from the artificial intelligence. Now institute it's a NGO, based in Europe, there, sorry, based in New York. And they wrote a big reports, 2017 recommendations, which you can see here. I won't talk about each one in detail if anyone is interested. They can have a look at the slides. And then we say, ok, this sounds good. But actually, actually there is something missing. Because they are still from talking about from inside the AI field. So what if we bring in the collective human artificial intelligence to each one of these very good ideas?

Now institute 是一个非政府组织，总部在欧洲，抱歉，总部在纽约。他们写了一份题为《2017 年建议》的报告。如果有人感兴趣的话，可以看一下幻灯片，我就不详细展开了。这听起来不错。但实际上却少了一些东西。因为他们还在人工智能领域内进行讨论。如果我们把人类的集体人工智能应用到每一个非常好的想法中会是怎样呢？

The list then looks like that. And the first conclusion is to say, ok, we are talking about human systems, human intelligence. We have to put the humans in the middle. There is no alternative. We have to talk. We have to have good conversations with a whole different variety of people. So these are some of the ideas which come out and doing that. Now here's a little cartoon of what is called now a COLLABORATORIUM meaning a laboratory for collaboration, where people learn how to work together. Not an easy thing. And we have been trying this for thousands of years. So this is the new phase.

看起来应该是这样的。第一个结论是，我们在讨论人类系统，人类智能。我们必须把人类放在中心位置。没有其他选择。我们需要交谈。我们必须和各种各样的人进行良好的沟通对话，才能产生想法。这张卡通画被称为合作实验室（COLLABORATORIUM），是由实验室（laboratory）和合作（collaboration）这两个字构成的，在那里人们学习如何一起工作。这不是一件容易的事。我们已经尝试了几千年了，现在正处于新的阶段。

And then we can say, okay, we have to talk about knowledge where it goes, how it's used. We talk about human flows, about how the power is used. We talk about innovation spaces, and experimental spaces. We talk about stepping stones, meaning things to help you on your journey, and also milestones, so you know where you are, where you need to go next. And keystone, meaning things that help other things to happen, insights, conceptual breakthroughs.

我们谈到知识，知识会去往何方，知识该如何使用。我们谈到人力流动，谈到权力如何使用。我们谈到创新空间和实验空间。我们谈到了垫脚石，指的是在旅程中对你有帮助的东西，我们谈到了里程碑，里程碑让你知道你在哪里，下一步你要去哪里。我们还谈到了楔石，指的是帮助其他事情发生的事情，指一些见解和概念上的突破。

And then the practical thing, we need a round table, so to say, we need a mind lab, so to say. We need above all spaces for thinking and dreaming. So this is only a cartoon. The reality is much, much bigger. And here is one story about the reality. This is on the front of my book. So I won't go into detail, but this is a story. It does not exist as far as I know. But it's a very interesting way to think about where we are going.

然后是实际的事情，我们需要一个圆桌，我们需要一个大脑实验室。我们最需要的是思考和做梦的空间。这只是一幅漫画。现实要大得多。这里有一个关于现实的故事，写在我的书的封面。我就不细讲了，但这是一个故事。据我所知，它并不存在。但这是一种非常有趣的思考方式。

If there is a deeper mind lab, somewhere underground operated by Google or stung near future version of Google and apple and Amazon all together. And we can then say, okay, so we can track the laboratory for smart cities on one side and the wise cities on the other side. And we learn as we go along. So that's really it. And I'll just say the latest book is now available. There's some background on cartoons on my home website. And I do hope to continue this conversation. And thank you very much indeed.

如果有一个更深层次的大脑实验室，在地下某个地方，由谷歌或未来的谷歌、苹果和亚马逊共同运营，我们或许可以从这头的智慧城市追踪到那头的明智城市。我们边做边学。还有，我最新的书已经上市了。在我的主页上有一些关于漫画的背景资料。我希望能和各位继续进行这方面的讨论。非常感谢。

Thanks. Bye bye.

再次感谢各位的聆听！再见。