Gemma Ware: Imagine you're walking through the bustling streets of any big city. The air is thick, with the odor of masses of people engaged in lively conversations. Suddenly, as you cross an ordinary intersection, you sense a shift in the atmosphere. You know something has changed. What you've experienced is an unseen boundary separating two distinct worlds within the same place. In this episode, we talk to a geographer about how he believes that these invisible lines can shape our experience of the world in subtle but significant ways. I'm Gemma Ware and this is The Conversation Weekly, the world explained by experts. Today I'm joined by Mend Mariwany, one of the producers of our show. So Mend, you came to me a few months ago with an idea for an episode about this, kind of, hidden geography that affects the way we all move through the world. And you've gone out and reported this story for us today. So what intrigued you about this new research?

Mend Mariwany: Yeah, so in our world, there's lots of boundaries, right? Think of the ocean, think of forests. These are physical boundaries. But there are also lots of boundaries that we can't actually see. They're not material in any way. Max Samson, who's a geographer at DePaul University in Chicago, recently published a book called ‘Invisible Lines.’ And he's interested in how these invisible lines impact us and the way we engage with them in the world every day. And that's the stuff that I thought was really intriguing.

Gemma Ware: And, Mend, you've been talking to Max for this episode. What does he mean when he uses this phrase “invisible lines”?

Mend Mariwany: So yeah, invisible lines are boundaries that, as the name suggests, they’re invisible on a map, essentially. The map on your phone won't tell you about them, but we do know they exist and we experience them every day. For
example, when we choose a root that's safer at night or when we take a longer route because we think it's prettier or because they're public spaces on the way. But these invisible lines can also divide entire regions in a country or in a place.

**Gemma Ware:** Huh! And so how do all these unseen boundaries actually affect us then?

**Mend Mariwany:** So, we're often told that we live in a meritocracy, where our life success is determined by the work that we do. But what Max argues in his book is that there's so many divisions in the world that we live in that have pretty radical impacts on our lives, even if we can't see them. And he wants us to become aware of them and understand how you might be affected in a different way to the way I'm affected by them, whether we're talking about the kinds of services we can access or passports and visa restrictions, but also things like job opportunities or insurances and mortgages, as we'll see. And sometimes these invisible lines eventually become visible and they lead to physical demarcations and borders, or they start to inform policy. And that's where Max and I started our conversation.

**Maxim Samson:** Many American listeners will be, I think, very aware of the history of redlining, the ways in which kind of helped to build segregation into American cities.

**Mend Mariwany:** The term Redlining originated in the 1930s when government-sponsored U.S. mortgage lenders color-coded neighborhoods. In the eyes of the mortgage lenders, green indicated the most desirable areas and red the highest risk areas, which are predominantly black neighborhoods. Later, the term went on to actively inform the policy of insurance firms, banks, and companies with denied loans or insurance to the red neighborhoods based on their racial and ethnic composition. Although redlining was officially outlawed in 1968 and the lines are no longer marked on any maps, their effect continues to persist across the US today. One example is Detroit and its infamous 8 Mile Highway, which runs parallel to other roads, such as the 9 and 10 mile.

**Maxim Samson:** So, I think a lot of people have heard at least of 8 Mile, partly because of Eminem and on the surface it's just a road, you know, it's a physical
entity, it's a multi-lane highway, it has these pretty tall, quite striking pylons. It's quite a distinctive-looking road but it's conceptual invisible meaning I think is much more compelling. It's long been seen as the divider and essentially is the divider politically between Detroit and its suburbs.

**Mend Mariwany:** Today, Detroit remains largely divided along racial lines. To the south of 8 Mile, the demographics tend to be poorer and predominantly African-American. While to the north, the population is wealthier and predominantly white. For those who know Detroit and its history, 8 Mile has become a visible dividing line of the city.

**Maxim Samson:** It's long been described as almost like a border, even though it's of course just a road that you can just cross, like you'd cross any other road.

**Mend Mariwany:** Can you explain a little bit more what you mean by invisible lines exactly?

**Maxim Samson:** Yes, absolutely. So, I focus on boundaries and belts that shape our understanding of and interactions with the planet. Even though, these boundaries and belts are all, to intense and purposes unseen, we can't actually see them. They are invisible. People will talk about the Bible Belt, but no one really agrees where the boundaries of it are.

**Mend Mariwany:** The Bible Belt is a region in the southeastern U.S. characterized by deeply conservative social values.

**Maxim Samson:** And I just became increasingly interested in finding other ways across the world in which people's lives, I think, are very much affected by these lines and how we imagine division across the planet. You know, when people hear about things like geographical boundaries, I think it's tempting to go straight to borders. There's a lot of high-profile examples, all the time, around border disputes. And I don't deny that these are already highly pertinent issues, but what I do in this book is foreground the subtler, unofficial, and crucially yet unseen boundaries, which you wouldn't typically see on a map, certainly not a standard
physical or political map, but that actually really do have a significant impact on how we engage with the world.

**Mend Mariwany:** So you just said you can't actually see these divisions. How do you actually go about studying something that manifests itself in the world but isn't visible?

**Maxim Samson:** I think a huge amount of this does come down to observation. I think about one example of an activity I do with an urban geography class, where I ask them to take the bus and you pick a route, going from a downtown location to the furthest sort of suburb on that route, or vice versa. And you just record as you travel and you see that housing types change, maybe green space change. If you think about the demographics of the people getting on and off can change, the language might change and for me, that's one way in which you might be able to identify these invisible lines between quite different neighborhoods and just by talking about walking around the city and noticing that you can walk from one place to another. You might see or notice that the language changes.

**Mend Mariwany:** Sometimes those invisible boundaries are indicated by subtle changes in the surroundings.

**Maxim Samson:** In Chicago, one example that I always find interesting is baseball preferences where the north side of the city, most people will support the Cubs, south side most people will support the White Sox and you can just notice in people's windows the banners and flags and so forth, pushed up by supporters of these teams, will change. You'll suddenly go from a primarily Cubs neighborhood to a primarily Sox neighborhood. And for me, that's partly what it's about. It's about noticing things and hopefully looking at our surroundings in a whole new way.

**Mend Mariwany:** What Max is saying here is that we can observe a lot of the distinctions and the way our cities and world is divided just by paying attention to shifts and changes we perceive. But it's not just in cities that invisible lines are noticeable. In his book, Max also uses the example of the Wallace Line, a line that
marks a sharp transition in flora and fauna between the Asian and Australian regions.

**Maxim Samson:** Alfred Russell Wallace, who helped to develop the theory of evolution separately but at the same time as Charles Darwin was doing this in the Galapagos Islands, just noticed very significant differences in the fauna on two sides of the Malay archipelago in what's now Indonesia, so identify that on one side of this dividing line you'll get what we might consider Asian animals like monkeys and on the other you'll get marsupials like you'd associate with Australia and that was quite a big inspiration for me.

**Mend Mariwany:** In nature, boundaries such as mountain ranges and rivers have often been used as a way to divide places on maps or to justify that division. But Max says there is nothing natural about that division.

**Maxim Samson:** One example I use would be the Ural Mountains, which you know, a lot of people would see as a boundary between Asia and Europe. Yes, it's a physical entity, but the idea of it being a dividing line is something which you can't notice. There's no big fence along the Ural Mountains saying this is the boundary between Asia and Europe, and it's always been very contested about whether it really is a boundary. It's not a very big mountain range. One story that I thought was interesting was during Operation Barbarossa when Hitler was invading the USSR, he thought that the mountains would be this great dividing line for his empire protecting Europe against any kind of invader from Asia. He gets there and realizes the mountains aren't all that big at all and changes his strategy as a result. So, I think it kind of goes to show it's partly about observation. It's partly about assumption. And in both cases, it can really affect how we actually engage with our surroundings and what we do in terms of our actions.

**Mend Mariwany:** Max says, in the examples he focuses on in his research, these invisible lines are much less visible than, say, the Ural Mountains. He gives the example of what's called the Qinling–Huaihe Line in China.
Maxim Samson: I think the Qinling–Huaihe Line is maybe my favorite example of this kind which really is truly an invisible line. So it's so subtle, and yet it's had this enormous impact on modern Chinese history and society.

Mend Mariwany: The Qinling–Huaihe Line is an imaginary line that separates China into two distinct regions, the humid and subtropical South and the dry and temperate North. Cities lying to the North of it include Beijing and Zhengzhou, and cities to the south include Chengdu and Wuhan.

Maxim Samson: And what it does is, first of all, historically at Karl Marx, a Chinese kind of cultural difference and historical difference. So broadly speaking, north of the line has historically had most of China's kind of key cultural sites. The Great Wall and the Terracotta Army, both found north of the line. In terms of cuisine, it's quite an interesting dividing line, partly based on the climate and the land types. So you typically will get more wheat-based items to the north, so more kind of noodle dishes and dumplings to the north, whereas you'll get more rice dishes to the south.

Mend Mariwany: But the line isn't just culturally significant.

Maxim Samson: What I think is most interesting of all is how it went from being a descriptive line into being a sort of line which could determine differences in the Chinese future. In the early 20th century, it was identified as roughly the dividing line between places where like the average January temperature would be below zero from places where it wouldn't fall that low. So places in the north very cold, places to the south are not as cold. When the communist leadership took over China, they could only afford to develop these sorts of communal district heating systems for part of the country. So they recognize that this existing line is quite informative, that you could see well, the north is very cold, the south isn't as cold. So, we'll build the heating systems only north of the line. So basically, if you live north of the line, your town probably had a heating district system. If you live south of it, it wouldn't have.

Mend Mariwany: He says, this policy has led to different levels of air pollution in the north, versus the south.
**Maxim Samson:** So you'll get people historically in the south complaining that their northern counterparts will have this lovely heat in the winter whilst they're struggling to afford their own means of keeping warm. But what's also really interesting is that these heating systems have been really notorious air polluters. So, it's why we also tend to see the most polluted cities in China, also north of the line. You'll get the heating, but you also get the air pollution. And since China has changed its economic structure quite a lot over the past few decades, we're seeing that the line is fading a bit to an extent in terms of its significance. A lot of cities are now really cleaning up their air. The southern cities on the whole are wealthier now and can afford plenty of alternative means of providing heat. But even today, you know, you tend to get the smoggiest air in the north of China. And that's something which has come about because the Chinese communist government took this line as a means of saying, “Here you get heating, here you don't get heating.”

**Mend Mariwany:** Another example he gives in his book is The Sahel. The Sahel is, broadly speaking, a transitional region on the African continent, located immediately to the south of The Sahara Desert. It stretches from the Atlantic Ocean and around Mauritania in the west to the Red Sea around Sudan and the East. I was really fascinated by that example. Can you just tell us how looking at invisible lines that divide and cross The Sahel can in any way help us understand that region of the world?

**Maxim Samson:** So, there's plenty of material on The Sahel, but people don't really agree where it is. It doesn't adhere to any kind of national boarder. There's a number of countries which are considered to be a part of The Sahel or parts of those countries are a part of The Sahel. But The Sahel also moves over time, which kind of makes it even more complicated. And as a region, it effectively divides The Sahara desert in the north, so very arid, of course, from The Savannas to the south. This is, kind of, like a transition zone between The Sahara and The Savannah. The main area of importance for me is certainly climate change. It is one of the parts of the world that's being, I think, most acutely affected by climate change, and it's also the part of the world which really contributes the least carbon emissions relative to its population.
**Mend Mariwany:** But The Sahel's boundaries are also constantly shifting and moving as a result of climate change.

**Maxim Samson:** The temperatures in The Sahel, when I was researching, are currently rising about a degree and a half Celsius faster than the global average, which is quite an incredible pace, and could increase by another three to five degrees Celsius just by 2050. Considering this is already a region that can be 50 degrees in the summer, it would be quite incredibly hot. We’re seeing that the kind of dividing line, the invisible lines of The Sahel are changing, that Sahara is kind of creeping into it, and therefore pushing its lines further and further south.

**Mend Mariwany:** The shifting boundaries mean that populations, particularly on the edges where the desert meets vegetation, are changing their habits too, depending on which part of the Sahara they fall into.

**Maxim Samson:** There's a lot of different battles which can take place between all sorts of ethnically based militias, there's been quite a big history of Islamist groups having success in recruiting people there, Herders are often quite highly armed. All these groups just competing over this massive territory, which does offer, I think, a fairly dystopian view of the future of climate change-affected society. Monitoring its boundaries are really important for that reason. And what's really remarkable, and this is where kind of, one of the most, for me, significant projects in the world, which is called The Great Green Wall, and is this plan, which is taking place, to plant, this huge wall of trees across The Sahel.

**Mend Mariwany:** The Great Green Wall is an ambitious environmental initiative aimed at combating desertification and land degradation across The Sahel. The plan is to plant a massive belt of trees and vegetation, covering around 8,000 kilometers.

**Maxim Samson:** So, it's essentially turning The Sahel into more of a visible boundary. You're planting trees, people cannot see where The Sahel is, at least part of it, realistically. It's a clear way of trying to create a new boundary against the desert through the use of trees, and it shows how I think humans are quite
conscious of this is a dividing line, you can't really see it, but if you plant trees
along it, it will actually have a tangible impact.

**Mend Mariwany:** I want to move to a current example. I want to move to
Israel-Palestine. Can studying invisible lines in the context of Israel-Palestine, help
us understand that conflict in a better way?

**Maxim Samson:** Yeah, I certainly think so. And I think, of course, there are so
many different layers to it and so much history over the course of centuries, let
alone just the kind of past 60 or so years. So, 1937 saw The Peel Commission
proposed to partition Palestine into separate Jewish and Arab territories. It's kind of
an example of trying to apply a line which in the first instance is invisible in order
to create a kind of border. And so this is a way of trying to make territorially based
demographic differences like official and fixed.

**Mend Mariwany:** But to understand the conflict and occupation better, Max says,
studying these invisible lines can reveal something about the way different people
experience the region in different ways.

**Maxim Samson:** One example of, which springs to mind, could be The Green
Line, which was drawn to demarcate Israel's borders from 1949 until the Six-Day
War in 1967, and it's still the mooted basis of a two-state solution.

**Mend Mariwany:** The Green Line refers to an armistice line created after the
Arab-Israeli War in 1948, that resulted in the creation of the state of Israel in the
same year. It led to what Palestinians call the ‘Nakba’ or ‘catastrophe’, because of
the mass displacement of Palestinians from their homes. The Green Line served as
the de facto border between Israel and the occupied Palestinian territories until
1967, when Israel annexed additional Palestinian territories in the Six-Day War.
Max says, while invisible to most Israelis, The Green Line remains part of
Palestinian memory and shapes their experience to this day.

**Maxim Samson:** Most interesting about it is many Jewish Israelis would struggle
to locate it accurately these days because it doesn’t really affect them all that much.
Whereas, many Palestinians are deeply conscious of it because if you’re
Palestinian and you go from the West Bank into the border state of Israel, you need to apply for a special permit, whenever you cross it, or if you want to move to it. And Palestinians living on either side of the line essentially have different rights, depending on which side of The Green Line they live on. I think that's quite an important dividing line that we see have a very major impact.

**Mend Mariwany:** Mhmm. If I read this right, what you're doing in your book Invisible Lines is to think about the ways that people are categorized, and how that categorization impacts their experience of the world, right? In some cases, that might be how the state sees you. In other cases, it might be how you identify. And in other cases, it might be how your practices, perhaps, define your experience. Your practice is just like the way you live, your lifestyle if you like. And all of these might be changing all the time. Is that right?

**Maxim Samson:** Yes, exactly. I think, you know, identity plays a huge role in understanding invisible lines. And these lines, really do help mediate our very different, varying experiences in different spaces. And so, I think, there are all sorts of ways, absolutely, where we see that our identity is very much shaped around these lines. And as you say, a lot of the time, it's how we perceive as much as how we perceive ourselves. I think about this again, when it comes to questions of redlining with racial segregation, it doesn't really matter effectively, the history of redlining how you identify yourself. But if you're perceived by other people as a member of a certain racial group, that can absolutely affect your access to different places.

**Mend Mariwany:** I asked Max what, if anything, we can do to start thinking about the invisible lines in the area where we live.

**Maxim Samson:** So, I think you could imagine your hometown and just draw it without any reference material, so just draw it on a blank piece of paper, or a tablet without looking at a map, an actual map of the place, and then compare it with the map and try and find out what things do you really emphasize and what things do you will not really know about and probably don't go to very much. And I think it can be quite informative, identifying the sorts of places you don't go to. And then, it's about being self-reflective again. It's like why don't I go there? Is it because it
has nothing that I feel interests me, nothing to offer me? Is it because I don't know, I've heard through hearsay that it's somewhere which I feel I wouldn't be safe in? I think, once you start doing that, you can really notice again, kind of, the invisible lines of your knowledge and the bounds of where you actually go and want to go.

**Gemma Ware:** That's it for this week's episode. Thanks very much to Max Samson at DePaul University for speaking to Mend about his research. This episode was written and produced by Mend Mariwany, with production assistance from Katie Flood. I'm Gemma Ware, the show's executive producer. Sound Design was by Eloise Stevens, and our theme music is by Neeta Sarl. Stephen Khan is our global executive editor, Alice Mason does our social media, and Soraya Nandy does our transcripts.

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