Just Mass Casualty Events Podcast Transcript

Intro [00:00:05] Now this is recording. RTI International Center for Forensic Science presents Just Science.

Intro [00:00:20] Welcome to Just Science, a podcast for forensic science professionals and anyone who is interested in learning more about how real crime laboratories work. In Episode 11 of the Forensic Advancement Season Just Science Interviews Special Agent Richard Marx, the supervisory agent for the FBI's Evidence Response Team Unit, to discuss what follows as a mass casualty event. Since joining the Evidence Response Team in 2006, Marx has been involved in support efforts following disasters both domestic and abroad. Listen along as he discusses the necessity for interdepartmental collaboration and the feeling of service following a mass casualty event in this week's episode of Just Science. This season is funded by the National Institute of Justice's Forensic Technology Center of Excellence. Here is your host, Dr. John Morgan.

Dr. John Morgan [00:01:16] And welcome to Just Science, the podcast for forensic science professionals. I'm John Morgan, your host with the Forensic Technology Center of Excellence at RTI. Our guest today is a very, very special guest. We had him at the Impression Pattern Trace Evidence Symposium giving a talk about his work with the FBI and mass casualty events. Special Agent Marks is the supervisory special agent in the FBI Laboratories Evidence Response Team unit at the FBI laboratory in Quantico. He's been doing that work since April 2006. He joined the FBI in 1997 and was a special agent in the Philadelphia division, doing everything from the drug squad to bank robberies, fugitive crime, violent crime, major offenders. But in 1998, he started to really get heavily involved with the FBI evidence response team responding to the Osama Bin Laden bombing in Nairobi, Kenya. He worked on the EgyptAir flight 990 off of Rhode Island, worked very heavily directing forensic recovery effort at 9/11 and the World Trade Center in New York City. He has been recognized as a finalist for the 2003 Directors Award from the FBI for Employee of the Year and many, many other honors. And since becoming a supervisory special agent at the Evidence Response Team Unit has done everything from the 2003 Algerian U.S. hostage killings to the Boston Marathon and Orlando Pulse nightclub shooting scene. I know I remember, as I mentioned, the Mandalay Bay shooting that happened this past year. As I said to Richard before we started, his career is unfortunately a history of man's inhumanity to man over the last 20 years. Richard, thank you very much for being on Just Science.

Richard Marx [00:02:59] Thank you for the opportunity to speak here. I really look forward to hopefully answering some of your questions about what we do here.

Dr. John Morgan [00:03:05] Well, Richard, it's a it's an unusual thing. So tell me, when you joined the FBI, did you have an interest in forensic science or in the evidence response work that you've gotten involved in? Or is that something you just kind of picked up after you started in Philly?

Richard Marx [00:03:21] My background was kind of like most of the young forensic scientists starting today. Most of them are inspired by TV shows. Mine wasn't quite as fancy as the CSI show. Say, mine was Quincy. So you know, the same types of things that inspire people now to get involved in forensic sciences that was what was driving me at the time to join. So I started because both of my parents were in law enforcement. My dad was an FBI agent at the time. My mom was working in a sheriff's department. They got me a volunteer job at the local state forensics crime lab when I was just a junior in high school.

So I've managed to work at every position in the forensic laboratory from an intern up to a bench examiner. And so I've gotten to see the lab from the inside, from the bench examiner side, as well as from where I'm at now on the crime scene side of the house. So it's been a wonderful journey.

Dr. John Morgan [00:04:12] Was there a particular practice or discipline in the forensic sciences that you really enjoyed more than any other?

Richard Marx [00:04:18] Well, I started out as a trace examiner doing microscopy from hairs and fibers. And, you know, while I was going to college, it was really beneficial. So I majored in chemistry while I was in college. That was the forensic scientist that I worked with at the time, told me that was the best all around degree to have. And so it was really valuable to be getting that on the job experience and learning what I could about forensics, because I really had a passion for it after my first crime scene and then seeing how the chemistry fit into it. So I was getting real world experience at the same time I was getting my education. It was very valuable. And then I had really good mentors at the Alabama Department of Forensic Sciences that really, you know, had a passion for it. And it's still that same passion in me. So it's a good experience.

Dr. John Morgan [00:04:58] This has been an amazing forensic scientist recruited out of Alabama, including by the FBI. That's quite a strong laboratory down there. So I guess it's a good training ground for future FBI guys.

Richard Marx [00:05:10] It is. You know, I think that's what makes the FBI's hiring experience so good because we do like to have other world experience. So whether you're a forensic scientist or you're doing a health care professional or something in the private sector, you bring those skill sets to the FBI. And that's what makes the FBI really an excellent agency to work for because you use those in everyday investigations. So having done crime scene work in a forensic laboratory, I always knew at some point that I wanted to be on the evidence response team because my first experience of seeing a mass casualty event was Oklahoma City, watching that on TV, working in the crime lab and wondering how somebody managed a scene that enormous or that large of the time. Little did I know just within a year of joining the FBI, I would be out in Nairobi on one of the bombings scene that was even larger than Oklahoma City. So you just never know where these paths take you.

Dr. John Morgan [00:06:01] So one of the things that's been unique about what you've been involved in is evidence response team responses that really went to mass casualty events, which are very unusual. I mean, I'm trying to remember in my brain. I know that there were a number of hijackings back in the 60s and 70s in this country. But for a long time we didn't experience an awful lot of mass casualty events. So did the evidence response team protocols have they evolved over the last 20 years as you all have learned? Or how did it feel going into Nairobi, Kenya, and the shops and things like that that you were experiencing then?

Richard Marx [00:06:38] Well, I think obviously the things that have changed over time is the technology that we experience now because as most people know, that are involved in forensic sciences, if you've been into it for a long period of time, things constantly change. There's basics in the science that will always be there. But the technologies, whether it's in fingerprints or explosives and how we detect things and how we see things is constantly changing. And if you look at what we were doing in '98 to what we're doing now, the training definitely reflects those changes in technology as far as what we're now utilizing to

collect evidence, how we're collecting evidence, even how we're mapping scenes and documenting the scenes, whether it be with total station or laser scanning. All of those things play into how the FBI conducts business and how a lot of state and local crime scene units are doing the same thing. They are also being exposed to the same type of technologies, whether it's that laser scanning or drone technology, total stations. It's all moving towards a digital documentation of the same. But all those technologies now are becoming easier to obtain by these police departments and a lot less expensive. So you're seeing a much more proliferation of what was in the years past too expensive to deploy in the field now or making it out to local and state police departments as well.

Dr. John Morgan [00:07:50] The other thing that's unusual about what I see in your career is that you've done both international work as well as a lot of domestic work, so that first response one that's mentioned in your bio to Nairobi, but you've also did the work in Phuket, Thailand, with respect to the tsunami and the Algerian situation and things like that. What are the unique challenges associated with working internationally with respect to these kinds of issues? Are you able to operate in the same way as you would here domestically, or how does that work?

Richard Marx [00:08:20] The FBI has a real good presence overseas through our LEGAT program, which, you know, works with the embassies and forms these partnerships with law enforcement. So a lot of the barriers that might have been in place 40 or 50 years ago really don't exist so much now because we do have local law enforcement assets that we're communicating with when we deploy out. So it really helps pave the way when we have these international incidents that we can deploy out on and provide assistance. And a lot of it is what country we're dealing with. Does that country really want our help and assistance in providing closure or investigative help in these matters? So in Nairobi, obviously during that one, the government was very open to having us come in and assist in documenting and sifting through the debris of the embassy bombing to determine what happened and what instruments were used to cause the blast. But, you know, now we've got partnerships. I sit on the Interpol DVI working group for mass casualties, and DVI stands for disaster victim identification. So we have experts from a lot of the countries like the United Kingdom, France, Germany. They help us when we go out on these scenes, whether it be the MH 17 crash. We worked alongside a lot of those international partners in helping to identify victims that were killed in the crash. The Dutch authorities welcomed us with open arms and we were able to help them through fingerprint technology identify a lot of the passengers that were killed on that flight. And then the FBI also has a secondary mission sometimes even though we want to help with these terrorism cases under the law, we also are allowed to help with humanitarian efforts as well, which a lot of people don't realize that. So through our the FBI is a disaster squad, which is part of our latent print unit. They actually are able to go out and deploy, for instance, at the 2005 Thailand tsunami, we deployed out and actually helped document that. I think it actually occurred at the end of December of 2004. But in 2005, beginning in 2005, we deployed assets out to help identify a lot of the victims in Thailand as a humanitarian effort. So if there's something large scale in the United States, whether it be a tornado, or an earthquake, a state or local medical examiner or even a police department has to do is request our help. And then we could come in and provide assistance, even in a humanitarian effort. So there's a lot of things I can bring.

Dr. John Morgan [00:10:35] Has the FBI been involved much in terms of some of the mass graves that are discovered when there have been issues with respect to governments or wars where, you know, you had a very large number of victims or maybe discovered as many as years after the fact. There's been some issues in Iraq over the

years and things. Have you all been able to work in that issue or is that outside of the purview of the things that you all have been involved in so far?

Richard Marx [00:10:59] No, we do and can provide assistance in those. For instance, the bigger deployments we did was back in the late 90s, 1999, I believe, was Kosovo, when they had a lot of the ethnic cleansing there, mass graves in Kosovo. As part of the war crimes tribunal, we actually deployed personnel from the evidence response team from several offices over there to help document the mass graves and to make sure that we documented, you know, how the victims were killed, what kind of forensic evidence are linking the people that did the crime? So that's part of what we do and bring to bear on that stuff. And in years past, we've been asked by different areas, even if we don't deploy to those areas because they are war torn areas or there's a high significance of danger. We are able to provide assistance and actually give input, whether it be the mass graves in Iraq or it be mass graves in some other country. We're gladly providing assistance and talking to people that will have feet on the ground that can identify those people.

Dr. John Morgan [00:11:59] Turning our attention more domestically, I have to say, in listening to your talk at IPTES, I was very struck by how much you emphasize the partnerships that you have with state and local agencies here in the United States and how critical that is to the success of the evidence response team and how the FBI approaches these kinds of scenes.

[00:12:21] Obviously, mass casualty events have been going on for a long time. And many times, you know, people have this feeling that the FBI is going to come in and take over. But we have strong partnerships with, for instance, one that I can talk about that we have an MOU with is the National Transportation Safety Board. Our relationship with them really got cemented during PW 800. It's been a wonderful relationship that we've partnered with them. But if there's an accident, a large scale transportation accident where it's either an airliner, a marine accident, it might be a train. As recently as some of the train accidents we've had here in the United States or even a pipeline disaster where they have jurisdiction over, we can provide assistance to them even though it's an accident. All they have to do is request and we'll send our teams out to help them document the scene because it is their investigation. We are there to provide them assistance. And then if at some point something turns criminal, say an airline crash, they see something in there that it looks criminal or there's an explosion they think is no longer a natural or an accident, then it easily becomes our case. And it's a simple handover. And they still stay on as our technical experts because they have a wealth of knowledge. As far as aviation accidents, as far as marine accidents that we don't see on a regular basis. And so they know all the people in the industries, whether it be the airlines or the gas line companies, that they can bring that expertise and help us document the scene and figure out what exactly happened. So that's one of the partnerships. And a lot of times when we deploy to different locations in the country, we're dealing with different police departments, different state authorities. So we have those field officers in those areas and they have the relationship that they maintain with their local police departments and local government agencies. So that really helps the transition smooth over. But we always kind of practice what we preach. You know, you don't want to send that guy out there, the one that makes people mad. We like to send people that are effective and good at liaising with our local partners, and a lot of times we work very well together because we can share information a lot of times a lot easier than what the TV shows make it out to be.

Dr. John Morgan [00:14:21] They briefly mentioned at the outset you were the special agent in charge of the forensic recovery effort at the World Trade Center after 9/11, in

charge of the site from September 12th, 2001 to August 9th, 2002. The key 11 month period that recovered of over 4500 human remains, 35,000 personal effects, 1300 vehicles, and 1.8 million tons of debris. I can't imagine arriving at the scene at that time and wondering, what am I going to do here? I mean, even with respect to the enormous resources you're able to bring to bear, it must have seemed quite daunting at the time.

Richard Marx [00:14:56] It does. And fortunately, having a few experiences before that, it kind of puts everything in perspective when you have these large scale scenes like a 9/11, where typically as forensic scientist or people to do crime scene work, you're focusing on very small items, whether it be hairs and fibers or projectiles or shell casings, whatever you're collecting at that time, and suddenly you're thrown 1.8 million tons of debris and you have to sift through it. So it offers its challenges, but a lot of the same principles apply and the same collection methods and documentations. All of that still applies. You know, the reality is, is look, it happened in New York City. The New York City Police Department and I have very good friends there, like my counterpart that ran the site with me, Jimmy Longo. Those type of partnerships are very paramount to running these things because when you're running an operation, for instance, a thousand people a day, 24 hours straight, it's a huge logistical operation. So you have to make sure you put all the right people into places, whether it be agencies or personnel, to get the logistics done of bringing the debris and, you know, outfitting it with personal protective gear, making sure you're getting the air monitoring correct. So that's part of it. And I can say up there with the 24 federal agencies that we had up there, everybody played together extremely well because everybody had a mission to do. And at the end of the day, at the end of the operation, once we all go back to our respective jobs, we're still the agency that we are. So when you're mapping something like that, processing it. It really makes it rewarding because, you know, at the end of the day, you're just doing it for the victims families. And that's really what the whole thing was about on these things. And that's something that kind of all of us, when you do an operation, whether it be the Pulse nightclub shooting or the Vegas shooting, you at the end of the day, want to give the same service that you would hope someone would give your loved one. That's really what I take to heart because at the end of the day, a victim's family will be your biggest critic on how you did and if you did right by them. And so that's really what keeps all of us focused on these things and making sure that we're doing what we do for all the right reasons and doing it for them.

Dr. John Morgan [00:16:49] We've had other podcasts looking at particular cases and I know some people have spent years trying to deal with difficult cases and serial murders and things like that. And just like you, this is a common theme that is, there's a certain dignity that you want that victims to maintain in their families to be able to maintain. And your professionalism is really something that they look to at the solace in and of itself that you take it seriously and you're bringing your professional ability of identifying these remains and doing so respectfully and thoroughly.

Richard Marx [00:17:21] I mean, we have an entire division, you know, at headquarters that deals with nothing but victim services. Our victim services division used to be known as the Office of Victims Assistance, but they are a huge force, especially when you have these mass shooting scenes now. The NTSB also has a similar type component where we we're interfacing with the families. You have to manage their expectations of what realistically they can expect as far as how long it's going to take to identify their loved ones, what resources are available to them, whether it's for grieving, for therapeutic reasons. So you have to manage those expectations. And then you also have to find out, you know, who's missing from their family, what do we need forensically to make that identification? You know, and that's where a lot of these family assistance centers are

stood up after these mass casualty events, for instance, in Vegas or in Orlando. And then that's where the loved ones can go, so they can file the missing person reports and then they can also give information about where's the dental records located at, where's their medical records located at? Can they give a DNA sample? Those are all types of things that are very important when we're dealing with these large scale events of how to identify the loved ones and then hopefully get them back to their family members when it's all over. So that's where our victim services, the lab, the NTSB, all the people that bring those type of things to bear can help in these cases. And that's where we leverage these partnerships to get that done and then again, serve the American people, giving them that closure or that help and assistance when they need it the most.

Dr. John Morgan [00:18:46] Yeah, so one of the things that you can bring to bear is the family assistance center. I saw in your talk, you were talking about a questionnaire that ties into the protocol that you use and the family assistance center to very systematically go through the information that the family has about their loved one and the different kinds of resources that you would use to try to do identification. And I was actually struck by how extensive the questionnaire is for the families. It must be a very difficult part of the operation in these cases I guess.

Richard Marx [00:19:15] That's why especially for the FBI, our victim services division, offers very well trained people that deal with the counseling and the talking to victims family members. And you think about the information that is often required on these files, because this is what we're dealing with, what's called the ante mortem data or the pre death data that we would need. Who is your wife's dentist? Or if you go to the same dentist, you're lucky, but you don't know that or your who's your wife's doctor or who's your husband's general practitioner or, you know, when was the last time that they were in a hospital? You may or may not know that information, but as much information can be derived on these forms and filled out helps us identify that person because you might have somebody that has a broken femur that they broke in their childhood and that might be significant to helping identify somebody in a really bad mass casualty event. So anything from fingerprint records, did they apply for a job, have they ever been arrested? Those type of things help us identify victims wherever they are, whether it be in a kidnaping case or a mass casualty case. Those are the types of things that we want to determine from the families. So it's a very key component to the whole process. And if you look at things like we've done in Orlando, immediately the evidence response teams team up with our victim services division and we provide that of getting personal effects back to the families as well as giving that information about what we need to identify the victims in those particular instances.

Dr. John Morgan [00:20:36] Now, the evidence response team, how deep does it get in terms of the investigation of particular incidents? In most of these incidents, of course, the perpetrator is usually well known, but the sequence of events may not be or the motives of the perpetrator may not be well understood or whether the perpetrator had assistance and things of that nature. How does the evidence response team play into considerations like that?

Richard Marx [00:20:58] That's one of the reasons I joined, because the evidence response team, we've got an evidence response team in all 56 of our field offices and we probably have about roughly about 1300 to 1400 personnel trained in forensic evidence collection techniques. So we have a crime scene, we can mobilize all those people, you know, whether it be ten people, a hundred people, 1000. We could move people and reallocate depending on the scale of the event. So and they're all standardized. They use

the same paperwork, the same equipment in every office. So it makes an easy transition. But the exciting part, at least I find, is when we have an incident, many of those unsung evidence response team people that go out and process the scene, they're the first ones to lay eyes on that piece of evidence. They heavily dictate direction a case may take. Many times you might know that there was a shooting. You might know that there was an explosion of some type. But was it a criminal intent? Was there something else involved? And that's where they get involved. And for instance, that Boston bombing, it became very apparent once the evidence response team members and special agent bomb techs from the explosives unit going to went out. There the first ones to lay eyes on the explosive pressure cooker and then find key components of the backpack. They're the ones that are seeing those particular items, getting those items back to the FBI laboratory in Quantico. And then we're exploiting those items and getting it out quickly to the investigative team so that they know what they're looking for, who might have built this, what kind of training they had. That's all stuff that the evidence response teams and like special agent bomb techs in that instance get out there and they find that evidence first. And that drives the entire investigation along with the investigative piece that the field office is doing. So that's what's really exciting. And that could change halfway through a scene, you might suddenly find something that takes it in another direction. So I think that's really the exciting part of putting that puzzle together and figuring out who did the crime and then what you can do to stop it if it's an ongoing sequence of events.

Dr. John Morgan [00:22:53] And like what you said upfront to and one of the things that you also can bring to bear a little bit, is the level of technology that isn't going to be available to every state and local agency. A lot of folks do have laser scanning, but most of them do not, especially at some of the state of the art stuff that's available now and being able to map out some of these scenes. And I know what you mentioned, there were several scenes where you actually had to shut down downtowns for some extended period in order because the crime scene basically is the downtown. And being able to do that efficiently and effectively is a bit of a challenge I think.

Richard Marx [00:23:25] Many times these scenes get larger when they're outdoors. It's one thing if you have an explosion or you have a shooting scene and it's inside a closed building. For instance, the Navy Yard was primarily in a closed building and with a small outdoor scene in a couple of areas. But for the most part, it's contained inside. Whereas if you have something like Dallas police shooting, a lot of it's outside and part of it's inside. And obviously when you're dealing with outdoor scenes, there's different things that can affect the scene, whether it be environmental, such as rain, weather, but also eventually at some point, there's a necessity for getting things restored back for life. For instance, you might have power outages. If it's done damage to infrastructure, you could have roads shut down that need to be open because it's a major traffic weight through the city. So those are things that we try to help mitigate because you could control certain aspects of the scene. For instance, the Pulse nightclub, it is easy to control the interior of the nightclub and retain that for a long period while you're processing the scene. But eventually other businesses need to open up because they're going bankrupt outside or the streets are closed down. And so while you're clearing that outdoor scene, a lot of times you start shrinking the exterior scene once you start clearing areas of forensic evidence. So it's a balancing act of working not only with the state and local government to get to what's necessary for them to function. And, you know, we have to work with the areas that we're in.

Dr. John Morgan [00:24:45] Yeah, it's interesting because one of the things that I noticed about the different scenes that you've been involved in is just how each one is kind of

unique. It's kind of one off even where you have mass shooting scenes, you know, the individual or individuals who are doing the shooting tend to vary in terms of, you know, what their motives are, but also how they move through the scene and the geography of it. There's differences when you have airline crashes, even sometimes whether it's a bombing or some other kind of reason for it to have occurred. You have, of course, things like the embassy from Kenya, but also some of the things I'm sure you saw when you went to Baghdad with the Iraqi Survey Group and those folks. What are the lessons learned across all of these different kinds of incidents?

Richard Marx [00:25:31] They do tend to play out a lot of ways. And really, whether it be just the responses, just the general processing of the scene, they kind of play out the same way. But when you look at it, we're really getting kind of an understanding of how long it sometimes takes to process different types of scenes, judging on the size. So we typically look at mass shooting scenes many times, obviously, depending on the scope and how large the scene is. But it could take anywhere from about 9 to 11 days just to do the scene itself. Some scenes could take as long as two weeks or longer. So it really depends on the scene. But we get a rough estimate early on of when we see the scene, we look at the size and scope of it and how many casualties and how many shots were fired. We can actually get a rough estimate of roughly how long we think. And again, that goes back to what the NTSB likes to call managing your expectations that we kind of use that as well. We like to manage the local government and police departments expectations of how long it's going to take us to document a scene, because when we go into a mass shooting scene, like the Aurora Theater Shooting out in Aurora, Colorado, where the gunman went in and shot the people in the theater, we'll bring out our firearms and tool marks in it for the laboratory, they will do trajectory analysis of where the projectiles went and embedded in the seats and in the walls. And then we'll also bring out our operational projects unit, which does all our mapping and scanning and documentation of the scene. And then ultimately the operational project unit in the laboratory is the one that will build the courtroom models and build, whether it be two dimensional or three dimensional renditions of these scenes, or they can even do a virtual scene. And that's where they, these units work so well together, putting these scenes together because you have to have a firearms examiner to go in and tell you where the shot went. And then you have to have an operational projects unit person to actually put that into a model or a diagram or into a virtual scene now. So that's where these scenes, you know, each one is going to be different. They all bring their own unique conditions, whether it be heat or cold. You know, you're working outside, you're working inside, there are confined spaces. Is there hazards? You know, do we need to bring somebody like the technical hazard response unit in to mitigate if there's gases or unseen health hazards in there? Do we need to be wearing respirators? That's when we bring those folks in. So how many people do we need to bring in? What do we need to document? How long are we going to be there? And then what are our local resources? Are we going to have to fly things in? Is the field office a long way away? Does the local police department have a lot of these resources that we can also utilize? So, you know, each scene brings its own unique problems and situations, but that's part of what I find challenging is actually managing that and then being able to address those problems kind of bring order to chaos. You know, we're doing what we need to do collected, you know, managing all the expectations and then hopefully, you know, finding closure for those families at the end of it all.

Dr. John Morgan [00:28:26] After you had been in this field for a number of years, you got a master of science and forensic anthropology from Boston University. What interested you in getting that master's degree and in particular in forensic anthropology? That's a

slightly different part of your chemistry background, but of course it's very much along the lines of doing the DVI work. Tell me about that.

Richard Marx [00:28:46] I think in this program and one of the things that early on was instilled in me when I was a young age, especially working in a crime lab with some of the folks that I work with, a guy by the name of John Kilburn and Roger Morrison were instrumental in mentoring that, you know, this process of forensic sciences was an ongoing journey of constantly learning. And, you know, they helped steer me in that direction of like chemistry or biochemistry with some of the best backgrounds they have, whether it be, you know, trace evidence or DNA or firearms evidence that was important. And so it's something that it stuck with me all these years. And you're always learning something new. And if you're not, you're falling behind on what you're doing out there. So for me, it was an opportunity to go to Boston University and get this degree, and I felt like it would add more to my understanding of other areas of forensics, because we do see this a lot out there. Look I'm not a, I don't consider myself, you know, an examining anthropologist. You know, there's plenty of board certified anthropologists that do that job. But the degree gave me a much better understanding to of what I could bring to bear on that. And so it's all adding to that that knowledge base that when we have these mass disaster victim identification events, whether it be overseas or here, it's just what else I can accomplish and what information, whether it be, you know, is the anthropologists going to be able to tell size, stature, age, that's all going to be important. And then, you know, what's the DNA expert going to bring it to the table? So for me, as somebody that helps manage these things and helps bring out the lab components, that's what is really important, is that broad understanding of all the disciplines.

Dr. John Morgan [00:30:23] Yeah, it's an interesting juxtaposition. And the, you know, starting off as a trace examiner, I think that somebody who's been involved in trace work is actually very well oriented toward crime scene work in some respects. And forensic anthropology, of course, is quite relevant to the DVI for evident reasons. It's forensic anthropology, just like anthropology in general, has been transformed to a great degree by the advances in DNA. Or where do you think things are heading in general and disaster victim identification and our ability to resolve these things and some of the problems around them better in the future?

[00:30:58] Technologies obviously changed a lot since the start of it because, you know, when I look at being a trace examiner and then DNA really changed that whole, you know, they took something that at one time hairs were associated. Now you can you get DNA evidence from the hair. So, you know, seeing that whole beginning of DNA to where it is now, it's changing drastically on how we're collecting it, the sensitivity levels of what, 15, 20 years ago, the sensitivity levels now that they're at, it's a large difference. And then, you know, what we're seeing now in DVI communities is a lot of especially internationally, even here in the States, there's obviously a lot of like minded individuals that when our events happen, they're all scientists. They want to bring the science to bear, make the identification of victims a lot better and standardize it, you know, so that if you have a German speaking team that they're using the same types of paper and the same types of equipment that, you know, the American team's using. So we're seeing that you're seeing a lot of standardized platforms being developed, whether it be here in the United States or overseas. And those platforms are allowing the collection of information, standardizing the forms, no matter what language they're in. That's really important when you're dealing with multinational events where you have the teams out there. And then again, like I said, the technology just being out last couple of weeks with the NTSB on train crashes and watching the technology that they bring to bear. Now, whether it be with drones mapping

the terrain and the crash scenes, that's changed dramatically. You know, what we used to rely on heavily in years past of tasking an airplane, putting a cameraman on a plane and getting overhead aerial photographs is now changing. Now we can do all that with a small drone and capture the same types of information and resolution. And so it's changed a lot and it will change more. And that's what's exciting about being in this type of fielding.

Dr. John Morgan [00:32:53] Yeah, let's be very exciting. I can't imagine if I were in your position that I would be doing anything else with my life. I assume that you're going to stay with the evidence response team for a very long time despite the challenges of it, doesn't it? Does it emotionally sometimes get difficult to do this work as well? I mean, I know a lot of folks have trouble even with their first crime scene, and it does tend to get to you at some point.

Richard Marx [00:33:16] Cause I look at its science, you kind of mentally separate yourself from it. You know, my first crime scene I saw when I was 17 years old, it was a double homicide. And I still remember it very vivid to this day. But it was what drove me to find the answers, to find a puzzle. And so for me, it was very poignant. But I also looked at it from a standpoint of it was I'm collecting evidence. But I do realize over time, and especially the longer I've done this thing, that it's more than that. You go into people's houses and collect evidence. And that to me, that's a very personal space and you have to have that dignity to collect evidence and homicide scenes in people's spaces of their house that they're suddenly vulnerable. So collecting that evidence, proving that crime is very important when you're in those scenes, but you have to be very analytical. In the bureau, we do have, you know, opportunities to get counseling if you do feel it's affecting you. But it's one of those things that over time, you know, I've I know how to basically look at it and put my mindset in the right order so that, you know, I go in there and collect the evidence and document it. And, you know, a lot of the things that you see on TV because, you know, the media covers, we just don't see that. We don't see a lot of the coverage because when we're out there working the evidence response teams or the teams that are documenting, many of those folks are working 15 hour days, many times seven days a week for long periods of time. So we're not really seeing a lot of the coverage when people are doing where they're focusing on our job and collecting the evidence. So, you know, we don't see a lot of the emotional pieces that are being played out on the news. But you certainly do see and hear the stories because many times you're talking to the victim services person or you're in the instance of 9/11, I met many of the victims families, gave them tours of the operation. And so you get those human stories. I remember one lady, her husband's favorite snack at the movie theater was those little snow caps. And she gave all of us a little package of snow caps. So you get those personal stories. You know, another lady, her husband died on 9/11. It was her birthday. And when we opened the trunk of his car, we found her birthday present and her roses that were wilted in a trunk. Now, this was six months after, and you can't think of a more powerful thing to give back to a family than something like that. So you do get those personal stories and you get that personal interaction on occasion. But that's what drives you to me. That's what makes it rewarding and a good feeling at the end of the day when you get to the bad person and lock them up and hopefully help that family get some justice and these type of things.

Dr. John Morgan [00:35:51] Well, this was a great conversation. We've been talking with Richard Marx, Supervisory Special Agent in the FBI Evidence Response team. Richard, thank you very much for being on Just Science.

Richard Marx [00:36:02] Hey, no problem. I look forward to hopefully seeing a lot of new fresh forensic students and people coming into the program because I think it's been one

of the most rewarding things that I've done in my career. And I just hope that there's new life out there that comes in and breathes new technologies into this already exciting field.

Dr. John Morgan [00:36:19] Well said, thank you very much.

Outro [00:36:27] This episode concludes our Forensic Advancement Season. Stay tuned as we delve into the identification season recorded at the 2018 International Association for Identification Conference. Please visit forensicceo.org to learn more about the FTCOE's other resources. Opinions or points of views expressed in this podcast represent a consensus of the authors and do not necessarily represent the official position or policies of its funding.