ReSound

For people with Cochlear Implants

Summer 2022 **Issue 74**

Buckland Abbey in Devon

Manchester CICADA a charity supporting implant patients

This newsletter has been produced on behalf of the Manchester CICADA Charity

contents

Editorial

Welcome to the Summer edition of Resound for 2022.

As you may be aware it has been a sad time for us at CICADA as we lost two members in June, Edna Clayton and Beryl Hardman. We have short obituaries for both in this edition, they will be be greatly missed.

We have had a trial session/workshop with the MRI team to see what the practical issues are in providing remote help for CI users with accessories which went well. There will be an update soon on the next stage of developing this type of help. Thank you for all those who registered interest, we will be in touch and if anyone wants further information please contact me.

It is still our intention to try and organise some social gatherings but in view of the increasing cost ot travelling these days we will plan them as local events rather than regional ones. With this in mind look out for information coming on local contacts for these events. We are always looking out for pictures or short stories about actvities that you have been involved with locally such as the Southport Kite event for example so if you have anything you've been out to see let us know.

We have a section on our website with lots of photographs of memorable events that have been run over the years so feel free to browse at:

www.manchestercicada.org.uk

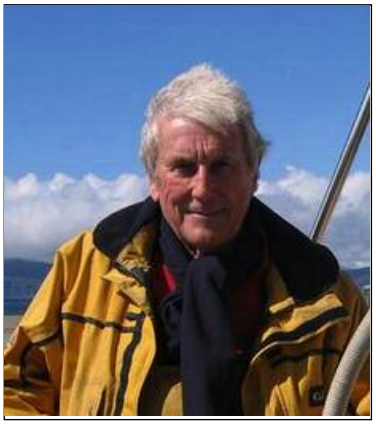
Once again, if you have a story to tell about your journey with the implant program we would love to hear from you, this magazine after all is about you.

We hope you find this issue of some help and if you've any comments, or stories to send along please let me know.

Kevin Williams - Editor

THE HELP LINE or How to jump the queue

by John Newton



I arrived in Manchester airport recently from a brief trip to Norway and was confronted with a huge crowd of people waiting to pass through the passport control. They jammed the corridor even before reaching the large space where the checks are carried out which was organised with that queuing system where one shuffles along a zigzag route backwards and forwards in the same space confined by tape barriers.

I am sure whoever thought of it is proud of their invention but it makes me feel like a sheep shuffling towards the abattoir and the man with the stun gun. However, in this instance it was no problem for me, I avoided a long wait and was immediately directed towards the head of the queue, via a lane marked "assistance".

I wonder whether everyone is aware that you can ask for assistance in airports? I suspect that most assume that it's only intended for people with obvious mobility problems who need a wheelchair or a buggy ride. I made the discovery that help was available some years ago when my main concern was with my defective hearing and the confused conversations that can lead to at the various stages on the route from bus to aircraft. It was sparked off by an incident when automated passport checks were first introduced.

While I was reading the instructions on the computer screen an official insisted on helping me, standing behind my shoulder to do so. Of course I had to turn around to hear him, which meant I couldn't read the screen in front of me at the same time. Much embarrassing confusion occurred which was compounded when a misguided but well meaning passenger also intervened so that I had three things competing for my attention.

So, on the next occasion, which was also at Manchester I asked for help and a charming young lady escorted me through all the barriers and left me at the boarding gate at the front of the queue. At the airports I have experience of recently, these kindly people are stationed at the entrance to the check-in and baggage drop, so you will see a notice, and usually some seating when you walk into the departure hall. You can also give advanced notice of your need when you book your ticket. This led to a little confusion on the last occasion because the on-line form asked only "is your mobility restricted or have you other disabilities such as being blind or deaf?" I ticked "Blind/deaf" as the only choice for me. As a consequence I needed to do a bit of explaining when I met my helpers. The outcome was good though, I was even escorted onto the plane first before anyone else boarded.

When two or three deaf people gather together to discuss their disability, problems travelling are almost certain to come up. The villains of the peace are announcements via the public address (PA) systems in the airport or on the aircraft themselves. In fact a lot of people with normal hearing find them difficult to hear and the good news is that

mostly they are unnecessary because there are illuminated screens which give all the essential information you need.

A lot of PA announcements often cover information that is quite unnecessary anyway like admonitions to be sure to take your luggage with you when you leave aimed presumably at people who might be inclined to donate their personal possessions to EasyJet.

On the plane itself the overhead signs tell you when to fasten or unfasten your seat belt. Of course, if after an announcement the other passengers all get up and leave the aircraft or the waiting area, it would be prudent to follow and find out what is going on! That's the occasion when you need to buttonhole someone in uniform face to face, explain your problem and get an update on the situation.

In general though deaf people have much less to fear with modern air travel.

JSN 26062022

Accessible Banking for Deaf People:
My Experience (Part 1)
by Deaffie Blogger

One of the most common problems that D/deaf people face on a daily basis is not being able to contact organisations easily. For D/deaf people who cannot use the telephone, this can cause frequent accessibility issues.

From utilities to banks, Government departments to shops and services, contact methods offered can vary, and some are better than others. It's often a case of researching each organisation individually to see which options they provide. You might think, the bigger the organisation, more provision is made, but not necessarily so.

The Equality Act 2010 advocates that 'reasonable adjustments' are made to help disabled people access services, but it's a very vague guideline and is open to individual interpretation on both sides and is based upon many different factors.

My 'accessibility' story…

A year or so ago, I received a missed call and voicemail and as I cannot hear on the telephone, I travelled to Mum's house for her to find out who it was from. The message was from my bank, HSBC; asking me to contact them about a suspected fraudulent transaction. This led to an ongoing chain of events which highlighted the difficulty I was having trying to get in touch with them.

Understandably, the main issues both customer and organisation face are security and data protection. Don't we all love 'data protection'? Especially when it prevents us sometimes from accessing our own information, but of course it's there to protect us!

I fully understand the challenges banks face to keep our money and data safe… Telephone banking is extremely challenging for them to guarantee the identity of the caller. But when it comes to accessibility and being able to deal with my accounts, I can see both sides of the argument.

If we can confirm our identity to the organisation, then all is tickety-boo, but when we can't due to communication restrictions, that's where the problem lies. Trying to contact

a remote service can be virtually impossible when you have a hearing loss, if it can't be achieved through online methods.

Exhausting all the options…

I asked my mother to call the bank on my behalf, thinking that if she spoke to them initially explaining I was deaf and alongside her, I could confirm my identity by speaking to the operative. This didn't work as she was informed that a third party couldn't be involved without a signed Third Party Authority mandate.

I also couldn't sort out this issue through online banking or any of the other communication methods offered, so the last option was to speak to a person face to face, therefore I had to travel to my nearest town to go into the branch.

This got me thinking; What if I couldn't get to the branch? What if I was abroad? What if I was at work? etc. Were they providing 'reasonable adjustments'?

The other options provided for D/deaf customers included:

- Sign Video (BSL users) – I don't know enough BSL, so this is not suitable for me.
- Next Generation Text Relay – no matter how many times I tried, due to the length of the query, the app kept crashing before resolving the issue.
- Signing multiple Third Party Authorities – why should I have to give away full access to my account to whoever I might be with at the time? (Work colleagues, friends, family, boyfriend etc.), this didn't seem either fair or secure for me. I only wanted a third party to access my bank for me while I was with them. We didn't want them to be able to telephone without me present.

Coming to a resolution…

And so began a long dialogue with HSBC as to how this issue could be improved for the future. This led to me taking legal action and involvement from the Financial Ombudsman.

Luckily, eventually I resolved the issue with them. During this time, I highlighted the challenges D/deaf people have to face when contacting their bank. We worked together to reach a solution to allow a third party to be able to telephone on my behalf, as long as I was in attendance and could confirm certain security details.

During this time, I decided to open another account at a different bank in case I couldn't overcome the issue. The next blog in this series tells you about how I worked with my new bank to overcome this issue and improve accessibility for D/deaf customers.

Deafie Blogger

http://www.deafieblogger.com

Where did that sound come from?

from research carried out by Southampton University

Most of us have five senses that our brains use to create a model of the world us. We see, hear, smell, taste, and touch our way around.
If one of your senses is not working properly, your brain fills in the gaps by paying more attention to the other senses. However,your other senses cannot always fill in the gaps. If your ears are not working, your eyes alone may not be able to tell your brain that an out-of-control car is screeching toward you! But what if we could help the brain fill in the gaps by purposefully sending the missing information through another sense? What if you could "hear" where a sound is through your sense of touch? This article will explain how people were able to do just that, using wristbands that converted sound into vibration.

In your head, you carry around a model of the world. This model has been built using all the information your brain has gathered from your senses. It tells you where things are, which things are dangerous or desirable, who is shy, and who likes to show off.

The model is continuously updated and improved by new information that pours in from your eyes, ears, nose, and mouth, and from sensors all around your body monitoring touch and temperature. Your brain loves information and is always hungrily searching for more.

But what happens when the information stops flowing from a sense because it is too dark to see or too noisy to hear? In this case, the brain fills in the missing information by focusing harder on other senses.

For example, if you are trying to follow a conversation but you cannot get enough information from your ears, you focus more on the movement of the speaker's lips. If you are walking down a dark street and think you glimpse someone lurking in the shadows, you listen all the more closely for footsteps.

Unfortunately, your brain cannot always get the information it needs by focusing harder on other senses.

If you are in a noisy hall, where clattering and chattering completely cover the voice you are trying to hear, you cannot get all the information you need just by focusing more closely on the person's lips.

For many people, this difficulty is not a temporary one that ends when the background noise fades or the light is switched on. Some people's brains are missing information not because it is too dark or too noisy, but because a sense is not working properly.

Ingenious devices, like glasses and hearing aids, have been invented to solve this problem, but sometimes they are unable to mend the broken sense. How, then, do we give the brain the information it needs? We already know that the brain uses other senses to collect missing information. Perhaps we can send the missing information through another sense.

LISTENING WITH YOUR WRISTS

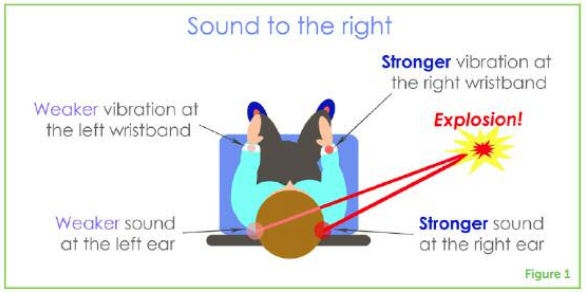
Many people who have damaged hearing struggle to work out where sounds are coming from. This can cause a lot of problems. For example, it is hard to get out of the way of a truck that you suddenly hear hurtling toward you if you do not know where it is coming from!

It is also hard for your brain to separate sounds that are coming from different directions, like the voice of the person in front of you and the music blaring from the speaker to your left.

Together with a team of researchers, we have been investigating whether vibration on the wrists can be used to help people work out where sounds are coming from.

When the ears are working well, your brain can pinpoint where a sound is by comparing how loud it is at each ear. As shown in Figure 1, if a sound is to your right, the soundwave travels through the air directly into your right ear. But to reach your left ear, the soundwave needs to first get past your head. Sound gets quieter when it is blocked by your head, just as sound gets quieter when you block it by closing a door.

This means that your brain can use a simple rule to work out where a sound is: if it is louder in your left ear then it must be to your left, and if it is louder in your right ear then it must be to your right. This is one of the main ways your brain works out where a sound is, and it is this rule that we took advantage of. We converted sound into vibration, which we delivered using wristbands that silently buzzed against the skin. Sounds heard by the left ear were converted into vibration on the left wrist, and sounds heard by the right ear were converted into vibration on the right wrist.

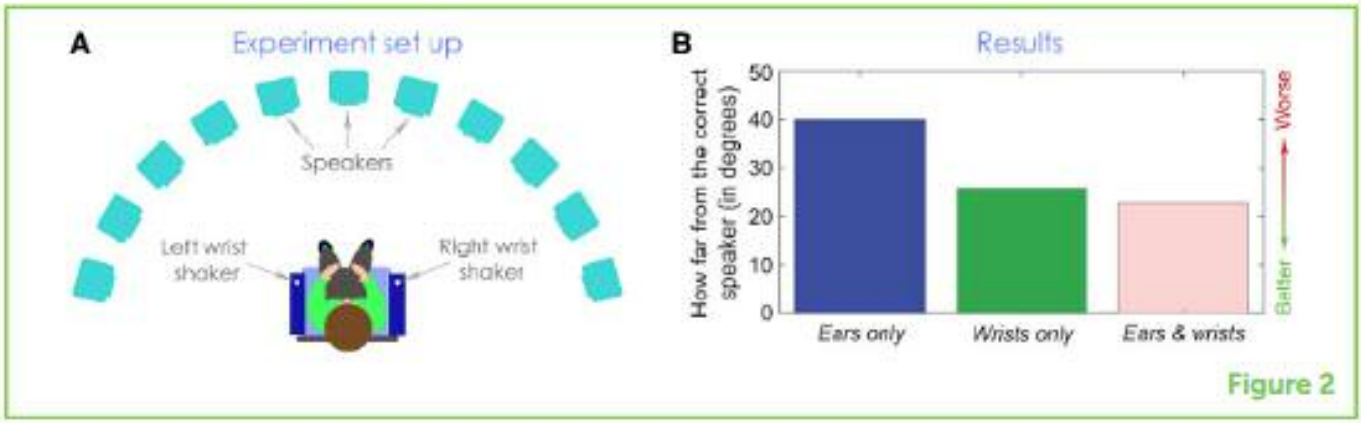


A person hears an explosion to their right. They have devices behind each ear that receive the sound. The sound from each ear is converted to vibrations that are delivered by wristbands on each wrist.

This meant that—just like for the ears—if a sound was to the right, the vibration was stronger on the right wrist, and if a sound was to the left, the vibration was stronger on the left wrist. We hoped that, by using the same rule that it uses for hearing, the brain would be able to work out where sounds are.

OUR EXPERIMENT

Our volunteers all had diculties hearing and used cochlear implants, which are a type of surgically fitted hearing aid. They sat in a chair with speakers in a semicircle around them and with vibrating wristbands on each wrist (Figure 2A). We tested how well the volunteers could work out where sounds were coming from when using either only their ears, only the wristbands, or their ears together with the wristbands. We played a sound from a speaker, then asked the volunteer which speaker the sound came from. We calculated how well they located the sound by measuring how far their answer was from the correct speaker. We measured this distance in degrees, as the angle between the correct speaker and the one they chose. We repeated this process over and over and calculated an average of all the scores. We were very pleased with what we found!



(A) In our experiment, a volunteer sits in a chair with vibrating wristbands on each wrist and with speakers in a semicircle around them. A sound is played from one of the speakers and the volunteer's task is to say which speaker that sound came from. (B)

The bars show how far on average the correct speaker was from the one the volunteers said (in degrees). You can see that the blue bar (ears only) is much higher than the green or pink bars (wrists only or ears and wrists together).

This means that the wristbands helped volunteers locate sounds more accurately. The pink bar is the lowest, which tells us that volunteers performed best when they used the wristbands and their ears together

DID IT WORK?

Figure 2B shows the results. When using only their ears, the sound locations that our volunteers identified tended to be a long way from the correct sound location. However, when they used either the vibrating wristbands alone or their ears together with the wristbands, they tended to be much closer to the correct location. Interestingly, our volunteers performed best when they used the wristbands and their ears together. This is good news, as it suggests that the brain is happy to combine information from vibration on the wrists with information from sound at the ears.

The finding that the wristbands can hugely improve people's ability to locate sounds is especially exciting because these improvements were made after hardly any practice. We have since shown that, when people train for half an hour per day over 10 days, they keep on getting better at locating sounds. Who knows how good they might get if they use the wristbands every day for months or even years?

A NEW KIND OF HEARING AID?

Besides helping people with hearing problems locate sounds better, we have been trying to improve other aspects of their hearing by sending missing sound-information through vibration on the wrists.

For example, we have recently shown that vibration can help people with cochlear implants understand speech better when there is a lot of background noise. This is a common problem in places like busy classrooms, factories, and offices. So far, we have

only shown that this approach can help people when they are tested in the lab. Now, we are looking to create a device that can help people in their daily lives. We are building a new wristband (Figure 3), similar to a Smartwatch or a Fitbit, that people can wear outside the lab, as they go about their day.

We are working with one of the world's biggest producers of hearing aids and cochlear implants so that our wristband can connect wirelessly to their hearing devices to collect the sound at each ear. We are also developing our own small devices that collect sound at the ears for those people who do not already wear hearing devices.

The design for our new vibrating wristband.

The lumps around the wristband have little vibrating motors inside them that buzz against the skin.

If our wristbands work outside of the lab, they could help people across the world. They might be especially useful in poorer countries, where hearing loss is left untreated for many millions of people.

Figure 3

In India, for example—a country of well over a billion people—less than a third of children with hearing problems go to school.

Adults with hearing problems in poorer countries are also much less likely to get jobs and so are often forced to live in poverty.

Devices like cochlear implants are too expensive for most people, and poor countries lack the doctors and hospital equipment needed to fit them. The wristbands we are developing could overcome these problems. They can be produced very cheaply and can be fitted without the need for highly qualified doctors or expensive medical equipment.

They could dramatically improve the job opportunities, education, and social lives of many millions of people with hearing problems. We are working as hard as we possibly can to make this happen.

ACKNOWLEDGMENTS

Thank you to the people that I had the great fortune to work alongside for the research described in this article: Robyn Cunningham, Sean Mills, Tobi Goehring, Sam Perry, Jana Zgheib, and Ama Hadeedi. My deepest thanks also to André Brokmaan, Hans Fleschenberg, Sando, Helen Fletcher, Jana Zleb, Frederique Vee, Toby Wells, and Davison Fletcher for kindly reading this article and giving extremely useful feedback. Funding for the author's salary was provided by the William Demant Foundation

Obituaries

Edna Clayton
1920 - 2022

I first met Edna over twenty years ago. She was a lipreading student in Stockport, attending a class that Hedy was running.

As I worked just over the road from the centre where the classes were held I used to nip over and help set the room up before things started.

At the time I first met Edna she did not have a Cochlear implant just hearing aids which didn't help her at all. She noticed that Hedy had a cochlear implant and after some discussions she decided to ask her doctor if she could have one. He told her she was too old! This caused a lively response from Hedy and after further discussions she was accepted on the list at MRI becoming, at the time, one of the oldest people to get an implant.

It was shortly after the operation that she joined CICADA.

Edna and her husband were involved in the professional world of training and showing dogs, their favourite breed was Alsatians and there were many trophies displayed in her flat when we visited her.

Despite her frailty of later years she managed to come along on several quite adventurous trips including lunch on the

narrowboats, the trip to Windermere, two Quarry Bank mill visits and meals at the Italian Orchard restaurant, which was one of Edna's favourites. We will all miss her and our thoughts go out to her family.

Obituaries

Beryl Hardman
18th June 2022

Beryl passed away at home after a short illness recently.

Beryl was a long time member of CICADA and helped out on the Committee right up to the end.

Living as she did in Blackpool at the northern part of our area she was invaluable in scouting out locations for us to hold events, the Italian Orchard restaurant became a favourite of ours for quite a while and also meeting for lunch in Southport during the season but also for Xmas lunch as well.

We had many memorable trips from

On the Gondola at Windermere

Windermere expedition to the Terracotta exhibition in Liverpool, in fact at one point Liverpool did seem to be CICADA's second home.

Lunches at the Liner hotel, trips around St. George's hall and scaling to the top of the Liver building and the Maritime Museum, at one point I was thinking of booking a season ticket!

Our thoughts go out to Glenn, Karen, Nigel and all Beryl's family.

Birthday cake cutting at the Liner

St Anne's Kite festival

Beryl and Edna at the Italian Orchard

Film Star Dogs

by John Newton

Some readers will be aware that not long before the lockdown, Hearing Link, the deaf charity merged with another charity whose name reveals its focus.

Hearing Dogs for Deaf People (HDFDP) has its HQ in the Chiltern Hills just north west of London. I have been a volunteer for Hearing Link for a good many years but until this merger took place I had no contact with the organisation which produces assistance dogs for deaf people. Moreover I have never owned a dog although I meet them often. On my daily walk in our local country park practically every other walker I meet has a dog.

The organisation necessary to breed and train hearing dogs is complicated and meticulous. Their parents are very carefully chosen to start with, only those who have produced successful pups in the past are normally selected and even then not every pup in a litter is considered bright enough to go on to be trained.

For their first year after the pups are weaned, they are fostered onto volunteers who take them into their homes so that they grow up in a domestic setting. After about a year, their training at the centre is started. The dogs are trained to alert their owner (which HDFDP, call their "partner") to sounds such as the alarm clock, telephone, door bell or smoke alarm. When the sound indicates something dangerous, like a fire alarm, they make that clear by their posture which is different from their reaction to, say, the door bell. They also are trained to respond to normal commands like "sit" or "go to bed" just like any other pet dog.

All that seems quite straightforward but the dogs also have to be accustomed to share all their partner's life which means they have to behave calmly when travelling by car, bus, train or plane and in social gatherings like a crowded noisy pub, or a family party, and when meeting other animals and children. If their partners have a job, they will have to learn to cope with the work environment too.

Sometime during their second year they are introduced to their partner. First in a residential setting held in the HQ near High Wycombe or their other centre near York. This introduction is organised also very carefully and gradually before they take up residence at their permanent home.

For all their lives the dogs are beautifully looked after, HDFDP have a host of volunteers who visit them periodically. They have regular check ups by a vet and their diet is carefully monitored. All in all, you could say that they are looked after, like privileged children.

The result is a film star version of a dog. They are of various breeds, cocker spaniels

are popular. When you meet one, the first impression you get is how beautifully behaved they are. In tedious meetings they sit quietly and hardly ever betray any impatience, all this training however does not stop them being normal cheerful and affectionate animals.

They are a delight to meet. They turn everyone into a dog lover and, of course they form very close and loving relationships with their owners (partners). When you meet such a partnership you are immediately aware of how supportive is the relationship and what huge psychological and emotional benefit they offer to their owners. I just wish that every dog owner could bring up their pets as well, especially the rowdy ones I meet on my walks who jump up at me and mess up my trousers with their muddy paws.

Find lots more about what HDFDP do on their website https://www.hearingdogs.org.uk

JSN 04072022

Lip reading corner

Barbara

This section of the magazine is a regular feature in future editions of Resound. Many of us consciously or unconsciously lip read when talking to others, and this has become infinitely more obvious during the pandemic.

Alison

In our lipreading classes, we don't just practice lipreading, we talk about practical things that help people manage their hearing loss.

Now that things are opening up after the pandemic, it is good to go out and enjoy ourselves. It can sometimes be frustrating when activities we used to enjoy become less enjoyable, and for some people, going to the cinema, or theatre, is no longer enjoyable because we can't hear properly.

I often find, in cinemas, that it is loud enough, but it lacks clarity. One solution is to attend captioned screenings or performances. Most cinemas have captioned screenings during the week. To find out what captioned screenings are on near you, go to https://www.yourlocalcinema.com/, to find a list.

>> StageTEXT

Theatres also have captioned performances, you can go to https://www.stagetext.org to find out what's on.

They open up opportunities for an enjoyable social life.

If you want to find out more about lipreading, or find a lipreading class, go to

atlalipreading.org.uk.

There's lots of useful information, and you can click on classes, and search for a town, to find out if there are classes near you.

There are also online classes, search on the atlalipreading website for 'OnlineOnly' to find a list.

New acoustic fabric converts audible sounds into electrical signals

Having trouble hearing? Just turn up your shirt. That's the idea behind a new "acoustic fabric" developed by engineers at MIT and collaborators at Rhode Island School of Design.

The team has designed a fabric that works like a microphone, converting sound first into mechanical vibrations, then into electrical signals, similarly to how our ears hear.

All fabrics vibrate in response to audible sounds, though these vibrations are on the scale of nanometers -- far too small to ordinarily be sensed. To capture these imperceptible signals, the researchers created a flexible fibre that, when woven into a fabric, bends with the fabric like seaweed on the ocean's surface.

The fibre is designed from a "piezoelectric" material that produces an electrical signal when bent or mechanically deformed, providing a means for the fabric to convert sound vibrations into electrical signals.

The fabric can capture sounds ranging in decibel from a quiet library to heavy road traffic, and determine the precise direction of sudden sounds like handclaps. When woven into a shirt's lining, the fabric can detect a wearer's subtle heartbeat features. The fibres can also be made to generate sound, such as a recording of spoken words, that another fabric can detect.

A study detailing the team's design appears in Nature. Lead author Wei Yan, who helped develop the fibre as an MIT postdoc, sees many uses for fabrics that hear.

"Wearing an acoustic garment, you might talk through it to answer phone calls and communicate with others," says Yan, who is now an assistant professor at the Nanyang Technological University in Singapore. "In addition, this fabric can imperceptibly interface with the human skin, enabling wearers to monitor their heart and respiratory condition in a comfortable, continuous, real-time, and long-term manner."

Sound layering

Fabrics are traditionally used to dampen or reduce sound; examples include soundproofing in concert halls and carpeting in our living spaces. But Fink and his team have worked for years to refashion fabric's conventional roles. They focus on extending properties in materials to make fabrics more functional. In looking for ways to make sound-sensing fabrics, the team took inspiration from the human ear.

Audible sound travels through air as slight pressure waves. When these waves reach our ear, an exquisitely sensitive and complex three-dimensional organ, the tympanic membrane, or eardrum, uses a circular layer of fibers to translate the pressure waves into mechanical vibrations. These vibrations travel through small bones into the inner ear, where the cochlea converts the waves into electrical signals that are sensed and processed by the brain.

Inspired by the human auditory system, the team sought to create a fabric "ear" that would be soft, durable, comfortable, and able to detect sound. Their research led to two important discoveries: Such a fabric would have to incorporate stiff, or "high-modulus," fibers to effectively convert sound waves into vibrations. And, the team would have to design a fibre that could bend with the fabric and produce an electrical output in the process.

With these guidelines in mind, the team developed a layered block of materials called a preform, made from a piezoelectric layer as well as ingredients to enhance the material's vibrations in response to sound waves. The resulting preform, about the size of a thick marker, was then heated and pulled like taffy into thin, 40-meter-long fibres.

Lightweight listening

The researchers tested the fibre's sensitivity to sound by attaching it to a suspended sheet of mylar. They used a laser to measure the vibration of the sheet -- and by extension, the fibre -- in response to sound played through a nearby speaker. The sound varied in decibel between a quiet library and heavy road traffic. In response, the fibre vibrated and generated an electric current proportional to the sound played.

"This shows that the performance of the fibre on the membrane is comparable to a handheld microphone," Noel says.

Next, the team wove the fibre with conventional yarns to produce panels of drapable, machine-washable fabric.

"It feels almost like a lightweight jacket -- lighter than denim, but heavier than a dress shirt," says co-author Elizabeth Meiklejohn, an RISD graduate student who wove the fabric using a standard loom.

She sewed one panel to the back of a shirt, and the team tested the fabric's sensitivity to directional sound by clapping their hands while standing at various angles to the shirt. "The fabric was able to detect the angle of the sound to within 1 degree at a distance of 3 meters away," Noel notes.

The researchers envision that a directional sound-sensing fabric could help those with hearing loss to tune in to a speaker amid noisy surroundings.

The team also stitched a single fibre to a shirt's inner lining, just over the chest region, and found it accurately detected the heartbeat of a healthy volunteer, along with subtle variations in the heart's S1 and S2, or "lub-dub" features. In addition to monitoring one's own heartbeat, Fink sees possibilities for incorporating the acoustic fabric into maternity wear to help monitor a baby's foetal heartbeat.

Finally, the researchers reversed the fibre’s function to serve not as a sound-detector but as a speaker. They recorded a string of spoken words and fed the recording to the fibre in the form of an applied voltage. The fibre converted the electrical signals to audible vibrations, which a second fibre was able to detect.

In addition to wearable hearing aids, clothes that communicate, and garments that track vital signs, the team sees applications beyond clothing.

"It can be integrated with spacecraft skin to listen to (accumulating) space dust, or embedded into buildings to detect cracks or strains," Yan proposes. "It can even be woven into a smart net to monitor fish in the ocean. The fibre is opening widespread opportunities."

"The learnings of this research offers quite literally a new way for fabrics to listen to our body and to the surrounding environment," Fink says. "The dedication of our students, postdocs and staff to advancing research which has always marveled me is especially relevant to this work, which was carried out during the pandemic."

This research was supported in part by the US Army Research Office through the Institute for Soldier Nanotechnologies, National Science Foundation, Sea Grant NOAA.

Story Source:

Materials provided by Massachusetts Institute of Technology. Original written by Jennifer Chu. Note: Content may be edited for style and length.

Notes

As we move from the lockdown, keep an eye open on the website and Facebook pages for more news of events and meet up's. Also if you can access a PC we can organise Zoom chats as well.

We would welcome any feedback or suggestions for events, articles for Resound especially on your experiences of the lockdown.

Either email secretary@manchestercicada.org.uk

Or write to me at the address below, all submissions are welcome.

CICADA

Website:www.manchestercicada.org.uk

Facebook group:Manchester CICADA club

Secretary direct contact:Text 07533217730

Main contacts for cicada listed at the bottom of this page.

Manchester Implant Centre

The Richard Ramsden Centre for Auditory Implants,Peter Mount Building, Manchester Royal Infirmary, Oxford Road,Manchester, M13 9WL

Main Contact Details:
TeL: 0161 701 6931 (Appointments)
TeL: 0161 276 8079 (repairs and spares)

* Please check the website regularly for updates on what the clinic are doing in the light of the virus outbreak.

http://www.manchestercicada.org.uk/implant-clinic/

National Support organisations

British Tinnitus Association:
https://www.tinnitus.org.uk/
Hearing Link:
https://www.hearinglink.org/
RNID (Action on Hearing Loss):
https://www.actiononhearingloss.org.uk/
Disabled Travel Advice:
http://www.disabledtraveladvice.co.uk/
Meniere's Society:
http://www.menieres.org.uk/
National Deaf Children's Society:
http://www.ndcs.org.uk/
National Association of Deafened People (NADP): http:// www.nadp.org.uk/

Equipment Suppliers for Deaf People

Sarabec: https://www.sarabec.com/
Connevans: http://www.connevans.co.uk
Hearing Link UK: https://www.hearinglink.org/
RNID (Action on Hearing Loss):
https://www.actiononhearingloss.org.uk/

COVID-19 information links.

(Just some official ones which you can subscribe to to get updates)
Main government website whih has links to information and also a facility to be on a mailing list for updates which is handy.

https://www.gov.uk/coronavirus

Most local council websites now have a corona virus section to tell us what they are doing and what services may be affected.

If you need help for other thngs during the duration of the virus then contact social services in the first instance.

Chairman	**Honorary Treasurer**	**Hon Secretary**
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