

## LIQUID VIBRATIONS

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Liquid Vibrations is a project that engages the participants in listening through playing music in water and through facilitating movement in water.

**How does it work**, some details about the way sound behaves underwater influence greatly the effect of our work

- Sound travels 4.5 time faster in water than in air, this changes the perception of directionality. The difference of the arrival time of the sound between the two ears is too short for the brain to identify the direction of the sound or any reverberation and therefore sense of space. This lack of sense of space is increased by the fact that...
- ...Sound is also perceived by the skeletal system as opposed to just the eardrum. Mostly affected are the spine and skull. The vibrations travel from the water to the bone and stimulate the inner ear directly, and so the listener actually perceives the sounds as if they are heard from inside their head, which they are, largely bypassing the outer and middle ear.

The result is a perception of sound that's incredibly detailed and immediate. Although clearly in a swimming pool, the actual sound is detached from its spatial origin. The lack of spatial signature in the sound gives the impression of a very personal and intimate experience. Despite being in a public space, the listener is in a very private space. in a womb like environment.

### **The background of this project is based in sound art and experiential art.**

I developed **Wet Sounds** in 2008 and with the help of Arts Council England embarked on three tours of swimming pools across the UK. As well as playing my own music I issued calls for proposals and curated three listening galleries for the UK tours.

Since then, Wet Sounds has installed in various swimming pools as part of national and international arts festivals. Over the years I have involved underwater performances and installations as well as adding over water soundsystems that play different content to the underwater system and commissioning musicians to prepare bespoke work for this setup.

My Wet Sounds performances have received very positive feedback from participants and listeners.

It is through meeting Adele Drake and benefitting from her experience in working with enabling music for children with special needs that we began to customise the experience to their benefit. I personally have never had any interaction with children with complex needs, I have no medical training and the only therapeutic

qualifications I have is for Traditional Thai Massage which I worked in a professional capacity over 10 years ago.

Adele's experience with Drake Music has shown that engagement with music can be of great benefit to children with special needs. The continuing and obvious need is the need for meaningful communication and interaction with their surrounding.

**Our emphasis with these sessions is on listening.** Listening and attentiveness being the first step in creating meaningful communication. In most people a great deal of this is an unconscious step and easily steeped in convention, which limits the scope of communication when dealing with different people or environments.

Therefore training in deep listening could open up new vistas of communication in that it increases attentiveness to one's surrounding and can increase tolerance to unfamiliar circumstances.

Our approach in this territory, and the idea with which we approached the project, is the assumption that although everyone responds to sound differently, the factors that affect **the listening experience** are shared by everyone.

**It is important that a therapy that works with the effects of sound and utilises the listening experience should take into consideration the factors that determine this experience.**

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## The Listening Experience

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These are some of the main factors that determine the listening experience

### The listener –

- physical capabilities,
- cultural background
- comfort and listening position
- mood, experiences directly preceding the listening experience

### The environment the sound is perceived in,

- the physical dimensions of the space the sound is played at and the materials in the space (reflective, resonant, porous, etc)
- the cultural space and cultural context
- other people in the space and the social space

## The sound itself,

- the compositional elements of the sound (semiotic, cultural, progression, emotional elements)
- the psychoacoustic and bioacoustic properties (frequency, dynamic, rhythmic)
- the method of its production (type of speakers, high or low fidelity, live and connected to an action or gesture, the performative aspect of its production)  
This affects how the sound reacts in the space and the meaning of its production.

The element that binds these three factors together is the Interaction. **Interaction** with these elements actively feeds back onto the experience itself and makes the listening experience an active process.

As discussed by Eric F Clarke<sup>i</sup>, J J Gibson's ecological approach<sup>ii</sup> sees organisms immersed in a continual process of perceptual learning. This is progressive differentiation as perceivers become increasingly sensitive to distinction in the stimulus information. Perception is essentially an exploratory engagement, a 'tuning in' and adapting to the environment, optimising its resonance with the environment and developing an awareness to the information that characterises it.

## There are different divisions describing the Listening Experience

I chose to use composer and theorist Pierre Schaeffer's<sup>iii</sup> **modes of listening**

*Ouir* – hearing a sound take place, such as the reaction that a patient might show to a sudden sound.

*Comprendre* – recognising a sonic signifier that points to an activity outside the domain of sound. Such as a ringtone or a device that signifies its operation by a tone. Sound as content.

*Ecouter* – Listening as identification of an activity, a physical or cultural or social environment. Sound as context.

*Entendre* – Deep Listening that pays attention to the qualities of sounds such as timbre and texture

These modes of listening have their parallels in the degrees of understanding of music and sound by people with complex needs.

To reiterate, our approach is that Listening is the basis to understanding a physical, social and musical environment. It is the basis to any meaningful communication and expression as it adds clarity to the context within which this expression is made. There has to be a cognitive appreciation and understanding of the musical and sound environment for the subject to engage meaningfully in a musical way or any other form of expression.

In the case of people hard of hearing, this would refer to their attention and sensitivity to the context of their surroundings.

## The aims we wish to achieve

As Liquid Vibrations began looking into adapting underwater sound to use in an educational and artistic context with children with complex needs at the hydrotherapy pools, we developed the following aims:

- **Developing a sense of individuality** and sense of self in the listener despite being in a public space. To promote a sense of self and individuality and to create a basis for linking proprioceptive and internal awareness, and auditory perceptions promoting external awareness, this could facilitate communication, musical expression in movement or sound. The creation in the listener of a mental connection between relaxation and contemplative listening (Schaeffer's *Entendre*) in combination with a sense of individuality, can enforce a sense of mental control over one's environment and communication with it.— this intimacy of listening occurs as a result of special properties of listening to underwater sound and the sense of privacy it evokes.
- **Developing an awareness of sound as a distinct perceptual entity.** This would serve to increase the taxonomy of different kinds of sounds which could create a wider range of access to musical tools, a more complex musical understanding and interaction. – This is done by detaching sound from its source and from its usual perceptual context, the listener has to actively approach the listening medium and choose to listen.
- **Presenting the variety possible within sound** within and without the traditional framework of musical progression – **Musicality is an individual cultural choice**, we advocate expanding the idea of a musical sound and therefore the method of creating it. we present a variety of music's which we classify as Tonal, Abstract and Narrative.

*TONAL/FAMILIAR* – Music that has a harmonious tonal progression and/or steady rhythm. serves to relax the participants into the new sensation and increase their interaction with each other and individual pleasure.

[In the pilot project we have asked the TAs to gather a list of the children's favorite music to no success, however in one session we had a request from one of the children for a song by Queen which was played to her great delight and participation.]

Generally speaking, the intention behind the term familiar music points to music which has the rhythmic and melodic structures of contemporary mainstream pop music. This assumes the children have a degree of exposure to mainstream music either through the radio, tv, the home or through music sessions with their teachers.

[PLAY: Example: Camille Saint-Saens, Aquarium from Carnival of The Animals]

**ABSTRACT MUSIC** – Music that is characterised by its use of unconventional sounds and flexible structure and its focus on sonic texture.

Composer Dennis Smalley<sup>iv</sup>: ‘*The wide-open sonic world of electroacoustic music encourages imaginative and imagined extrinsic connections because of the variety and ambiguity of its materials...*’.

In the same way that visual puzzles and optical illusions make conscious the borders between stimulus and image recognition and thus confuse the brain to find an explanation, so does abstract and unfamiliar music can encourage the listener to pay attention to the textures and sonorous qualities of the sound. It can induce deep listening.

[PLAY: Extract from an abstract mix composed by J. Cahen]

**NARRATIVE SOUNDS** - Narrative sound is regarded as a sonic signifier, a sound object that, much like a photograph, represents the original but is only a reproduction. Part of assimilation into a society that is saturated in reproductions (and has confused the relationship between original and reproduction) would include exposure to reproductions, in sound, image and object.

These sounds could be narratively bound to the dramatisations in the ‘dry’ sessions in the classroom preceding the ‘wet’ pool sessions, but are not limited to them, as we intend to explore throughout the sessions with the teaching staff. Examples of natural sounds could be the sound of whales or of a lion roaring or rain, underwater, they can be heard in isolation. Sonic qualities can then be recognized by the participants as musical sounds. This is because narrative sounds are usually heard in an experiential context, (Schaeffer’s *Ecouter*) their isolation and disassociated from an actual event, as reproductions, brings to attention sonic qualities which might otherwise be masked by the event. This could also expand the sound palate of the listener and find expression in their musical expression.

[PLAY: Narrative sound examples prepared by J. Cahen]

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## How do we achieve these aims?

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**Wet Sessions and Dry Sessions** - So far we conducted several pilot sessions at the St Nicolas Special Needs School in Canterbury in 2010 and 2011. With the arts teacher there, we initiated sessions which were split into two:

1. Classroom based drama with added sound effects and music, where the children were also encouraged to vocalise and participate in the story.
2. Underwater listening sessions that used similar sounds from the dry sessions.

By splitting the sessions, the intention was to create a context for a listening session, with an introduction in the classroom to the act of listening as integrated with dramatic activity. In the swimming pool, we hoped to achieve a mental reimagining of the drama witnessed earlier using sounds only and therefore use

sounds as a trigger which connects mentally to a narrative and a previous experience.

We also initiated a Call and Response game where the children were asked to identify the sound that is happening now in the water.

***Movement therapy*** - We collaborated with Steve Karle who is a **Watsu** practitioner. Watsu is a technique for therapy through movement in water where the practitioner guides the participant using minimal contact and the weightless buoyancy in water to achieve a state of total muscle relaxation. This also facilitates the ideal position for underwater listening with the back of the head immersed in water rearranging the posture for deep relaxation. Creating a floatation tank effect.

Watsu benefits include: increased mobility and flexibility, muscle relaxation, fuller deeper breathing, reduction in anxiety and stress levels, decreased pain, improved sleep and digestion and a general sense of wellbeing.

***Developing intention and action*** - When not being treated by the Watsu practitioner, participants initiate listening themselves as part of their playful use of the pool. The listening is brought upon by choice and relieves the impetus for finding out what is going on. It is therefore an abstract artistic experience, which allows for contemplation and choice for interaction.

***The pool as a playful social space*** - Hydrotherapy pool sessions generally have an atmosphere of play and fun in them and we certainly use the positive environment as part of the session, it becomes playful and encourages curiosity and social interaction between the participants. The pool is a social space, which transforms into a private and intimate space as soon as the participant places their head in the water

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### **The sessions at St Nicolas School or Special Needs, Canterbury**

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were observed and reported on by Dr Tiija Rinta of the Institute of Education. We didn't have a way to monitor development of individuals over time because of the way these pilot sessions were scheduled into the school curriculum and the change in some of the group's members.

Correct assessment and diagnosis remains a difficulty; Emotional and musical progress are more difficult to define and assess within an educational and artistic perspective than in a music therapy context where time can be given to assess the progression of each individual

However we have observed several effects in individual sessions such as:

- **The children engaged in listening** to the underwater sounds, this was evident in their ability to remain quiet and still for the most part of the session.

- As the session progressed they displayed **increased voluntary movement**: the motivation to move, through interest in listening to sounds in water and pleasure, movement being made easier because of being unpremeditated and spontaneous. For example, the girl who had a poor sense of balance was static during the first two sessions, yet she swayed to the music during the final session.
- **Vocalisation** in response to familiar sounds played
- The confidence to **interact socially** with other children as opposed to the classroom sessions
- **General well being and joy** at the experience and responding with movement. it was reported that the children behaved better in the classroom after the sessions, which is likely to have resulted in enhanced abilities to concentrate and to learn.
- As the sessions progressed. The children were more able to recognise and name the narrative sounds during the third session than during the first two sessions. Becoming more **aware and familiar with different sounds** is likely to have facilitated the children's ability to become increasingly aware of their environment and sounds surrounding them.

[SHOW FILM from hydrotherapy underwater listening sessions at St Nicolas]

### Testimonials

The carer of the first participant girl reported that the girl had responded to the sound by putting her head in the water through her own initiative. She had also laughed throughout the sessions and independently vocalised in response to questions regarding the sounds.

The carer of the second girl stated that the girl had responded by signing several of the sounds heard during the session and that she had thoroughly enjoyed the sessions.

The carer of the third girl reported that the girl had enjoyed the story in 'the dry session and being in water in 'the wet session'. She had also been able to recognise the sounds and music heard during 'the wet sessions'.

The carer of the boy reported that he had greatly enjoyed participating in the sessions. In particular, he had enjoyed listening to the sounds of the birds.

**The Head teacher, class teacher and carers** of the participant children stated that the sessions had been very beneficial to the children and, as a result, the school had put forward a proposition to the parents which was supported to purchase underwater speakers as a legacy from the project in order to be able to continue with the sessions.

## Plans for future sessions

With the generous support of the Milton Keynes Community Foundation and SEMPRE we will initiate a series of 10 sessions this year with the Redway School for Special needs. We are also hoping to start work with the Bridge School in Islington on 10 sessions.

We are interested in finding out through observation:

1. Do the listening sessions affect expression, communication, movement and awareness while they are happening?
2. and in the long term?
3. Is there a discernable progression throughout the sessions
4. What is the scope for conveying educational curriculum through this method?

We will work closely with the music teacher and develop ideas from our pilot session at St Nicolas. It is too early to say what these sessions consist of but we will monitor the children's reactions and progress and keep the programme flexible enough to work in any alterations to the content.

If you would like to experience underwater sounds for yourselves then please check my website [www.wetsounds.co.uk](http://www.wetsounds.co.uk) for the next installation.

**We should say we are still at the beginning of our research, seeking opportunities to do more, and exploring possibilities not only with special schools but also with music therapists.**

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<sup>i</sup> Clarke, Eric F. (2005) *Ways of Listening*. Oxford University Press. p18-p19

<sup>ii</sup> Gibson, J. J. (1966) *The Senses Considered as Perceptual Systems*. Boston: Houghton Mifflin

<sup>iii</sup> Schaeffer, P. (1966) *Traite' des Objets Musicaux*. Paris: Editions du Seuil.

<sup>iv</sup> Smalley, D. (1992) The listening Imagination: listening in the electroacoustic era, In J. Paynter, T. Howell, R. Orton and P. Seymour, eds., *Companion to Contemporary Musical Thought*. London: Routledge, 514-554.