

Dive into heritage

Increase the virtual immersion of sites with exceptional World Heritage values on the *Dive into heritage* platform thanks to the sound environment.

How would sound immersion enrich the platform and offer a better understanding of our current environment ?

« And while a picture may be worth 1,000 words, a soundscape is worth 1,000 pictures »¹

In contrast to the gradual change of World Heritage sites, the sound environment tends to evolve rapidly (disappearance of birds, industrialization, etc).

Intrinsically, a sound environment transmits a lot of information that can be divided into three components.

- **Geophony**, which represents non-biological sounds such as wind or waves.
- **Biophony**, which consists of sounds from living organisms.
- **Anthrophony**, which constitutes the sounds generated by humans.

Thanks to the images collected in advance on the internet, it is possible to roughly establish the sound universe that revolves around the site as well as its acoustics.

A. Around Qal ' at al-Bahrain (Bahrain fort)

GEO: Gulf Coastline

Sound of waves and moderate to strong wind.

BIO: Presence of trees and crops

Sound of birds and mammals.

ANTHRO: Manama and its surroundings

City industrial noise. Presence of roads with passing cars, motorcycles, or trucks.



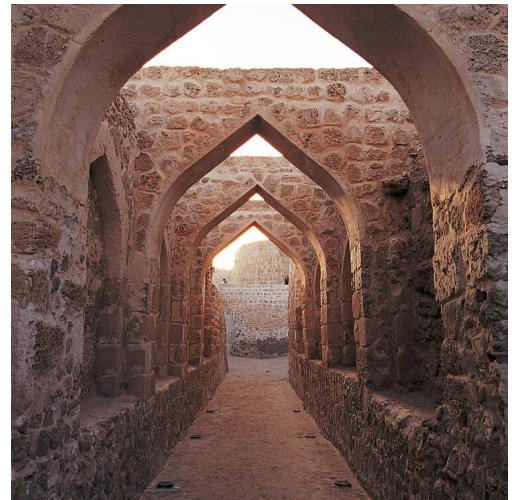
¹KRAUSE, Bernie, *The voice of the natural world* [online], available at: https://www.ted.com/talks/bernie_krause_the_voice_of_the_natural_world , consulted on 15 February 2023.

B. Inside Qal ' at al -Bahrain (Bahrain Fort)

The architecture of the stone monument and the presence of sand on the ground form an acoustic characteristic of the place (reverberation).

This specific resonance is also defined by time.

The larger the dimensions of the space, the greater the reverberation time.



The particular sound imprint of a place can be transcribed through various recording processes.

C. Qal ' at al-Bahrain at different times of the day and night

The soundscape of a site varies throughout the day. It seems interesting to capture at least four particular moments.

- Sunrise, noon, sunset and night.



Materials

I. Field sound recording outside direct collaboration with the 360° video capture team.

I decided specifically for this project to use three types of stereophonic recording :

- *Schoeps ORTF* : Very good relationship between source localization and spatialization.
- *Schoeps MS* : Offers the possibility of recording specific elements and good compatibility between stereophonic and monophonic for spoken voice.
- *LUHD Microphone* : Native binaural sound recording which results from a 3D effect on the headphones.

II. Alternative in the context of joint sound recording with 360° video capture.

There is so-called *ambisonic sound capture* which allows a 3D sound effect and rotation of the sound according to the movement of the 360° video. This capture requires more post-production.

Sound example made by Mh acoustics : [EigenMike EM64](#) ²

Sound example made by Voyage audio : [Voyage audio spacial mic](#)³

Examples	Descriptions	Price	Comments
Capture equipment in conjunction with 360° video	EigenMike EM64 - \$15,000 Wind protection - \$700 Ethernet Switch - \$100 Shipping - \$500 Computer - \$1200 Batteries - \$300	\$17800	360° video integration. Very high quality multi-channel recording. Very good localization of sources in 3D. Possibility of integration in stereo, binaural (3D with headphones).
	Travel Audio Spatial Mic - \$2,899.00 Computer - \$1200 Ethernet Switch - \$100 Batteries - \$300 Wind protection - \$40 Suspension - \$80 Cables - \$50	\$4669	video integration. Very good quality recording with precise 3D localisation of sources.
	Ambeo VR Mic Sennheiser - €1550 Wind protection and suspension - €100 Recorder rental - € 30 x5 days	€1800	360° video integration. Good quality recording with poor 3D source localisation.

² <https://www.facebook.com/watch/?v=1038911089608792>

³ <https://www.youtube.com/watch?v=ldIYlbRL--0>

SEO

Creation of an archive database with specific referencing for all sites .

Qal'at al-Bahreïn قلعة البحرين

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> - Precise date . - Duration . - Location. - Panoramic photo. - Description. - Type of capture. - Microphones / Recorder. - Sampling frequency / Quantification. | <ul style="list-style-type: none"> - 2023_02_28 - 15'34" - 26.235337_50.574280 - Couple ORTF - Schoeps MK4 x2 / Sound devices Mixpré 6 - 96000 Khz / 24 bit - Description - Photographie |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Calendar

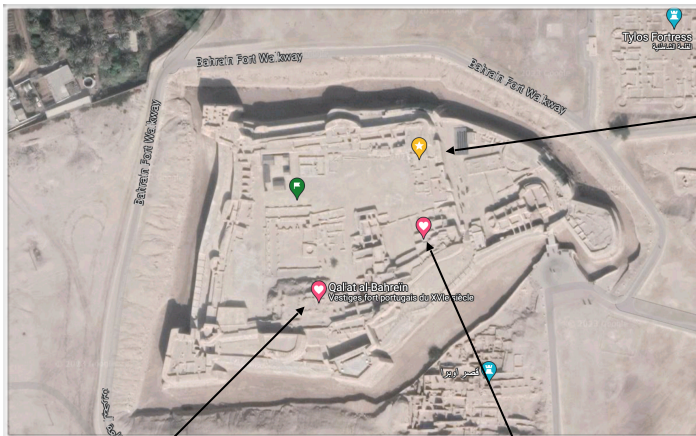
	Days												
Activities	1	2	3	4	5	6	7	8	9	10	11	12	13
Recovery of rental equipment, travel, on-site location and start of recordings. Flexible depending on the accessibility of the site.													
Audio recordings at various locations throughout the site, from sunrise to sunset as well as at night.													
Return trip, return of rental equipment. Flexible depending on the accessibility of the site.													
Day OFF							OFF						
Preparation of a sound report, derushing, editing of audio files.													
Mixing and export of each audio file to the archive database and the platform.													
Archiving													

Estimated budget (excluding direct collaboration with 360° video capture)

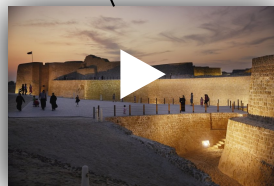
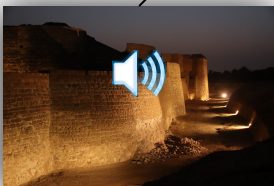
Activities	Descriptions	Total	Comments
Material	Subtotal	1107	Estimated budget per site with a base of 6 rental days.
Personal audio equipment	Rental: Microphones (MS Schoeps couple) - € 58 x 6 days Suspensions and wind protection - € 12 x 6 days Audio recorder (Mixpré 6 Sound devices) - € 30 x 6 days	600	
Professional audio equipment	Rental: Microphones (ORTF Schoeps pair) - € 65 x 6 days Suspension and wind protection - € 19.50 x 6 days	507	
Field work on site	Subtotal	1020	
Journey	Air travel around € 500 round trip. Variable	500	
Accommodation on the ground	To be defined for 5 nights € 80 x 5	400	
Meals on the ground	To be defined for 8 meals 15€ x 8	120	
Studio work	Subtotal	1437	
Laptop	Purchase of a laptop for processing audio and/or video files. 1200 € x 1	1200	I have a computer capable of processing audio data if purchase is not feasible.
Audio equipment	Purchase of additional batteries € 118.80 x 2	237	
Remuneration	To define	To define	
TOTAL AMOUNT (in €)	3564.00	309.91	3873.91
<i>Percentage of total amount</i>	92 %	8 %	100 %

Integration on the platform

Interactive map of specific sound elements.



- Location
- Panoramic photo
- Description
- Capture type
- Microphones
- Recorder
- Sampling frequency
- Quantification
- Exact date
- Duration



Integration of previously chosen and edited sound files. The recording time for each file can be defined before integration (1hour, 30min or 2min - from sunrise or sunset or at night). During autonomous sound recording, it would be important to have a view of the 360° videos in advance in order to get as close as possible to them. It is also possible in post-production to join the stereo recording to the 360° video.

Go further..

Young audience :

Sound recordings can be integrated into an educational and entertaining framework. Thanks to simple questions, the imagination can be developed through listening to a soundtrack.

- Where was the soundtrack recorded ?
- What do you mean ?

These sound recordings can thus be linked to the different web pages of the element in question.

