



# KIBLA<sup>TM</sup> XIBLIX 2019

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# **KIBLIX<sup>®</sup>** **2019**

**FESTIVAL UMETNOSTI IN TEHNOLOGIJE**  
**FESTIVAL OF ARTS AND TECHNOLOGY**

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MMC KIBLA Maribor

**[WWW.KIBLIX.ORG](http://WWW.KIBLIX.ORG)**

Kiblix se v časovnem paketu 2019–2023 usmerja v raziskavo in kritiko sodobnih tehnoloških medijev ter njihovo mehko uporabo v sodobni umetnosti, kulturi in izobraževanju.

## STOPNJA PRISOTNOSTI

### Lekcija ∞: virtualna, obogatena in mešana resničnost

Pri vsakem tehnološkem mediju je *conditio sine qua non* tista tehnologija, ki brezhibno deluje, saj se pri konceptualizaciji, prepletu tehničnih zakonitosti in vsebin, torej pri izvrševanju idej in konceptov v kreativnih laboratorijih zaradi pomanjkanja učinkovite tehnološke podpore vedno zaplete. Pod okriljem velikih korporacij se namensko in sistematično podpira vedno hitreje rastoč razvoj velikih tehnoloških dosežkov, nenehna optimizacija tehnologije je plod številnih raziskav in osredotočenega dela, da bi se lahko na tržišču ponudila strojna in programska orodja za izdelavo novih vizij in produktov za najrazličnejše uporabnike.

V skladu z izračuni ameriške investicijske banke Goldman Sachs, bo vrednost OR in VR na globalnem finančnem trgu narasla do 2025 na 95 milijard dolarjev.

Najmočnejše zahteve trenutno prihajajo iz kreativnih industrij – igričarstva, dogodkov v živo, video zabave in maloprodaje, širi se na področja medicine, izobraževanja, vojske, nepremičnin, kulturne dediščine in umetnosti.

Umetniški medij, da ali ne? Po eni strani gre za preslikavo, imitacijo umetniškega dela, razporejanja v galeriji, arhiviranja, dokumentiranja, zgodovinjena in po drugi strani medij kot umetnost, ki ni nujno podobotvorna, ampak lahko raziskuje medij kot tak in njegove meje, kreativna nadgradnja medija, kreativna raba medija. Dokler medija ne poznaš postopkovno, procesualno, ne moreš z njim manipulirati, ustvarjati, kritično razmišljati o njem – razen o vsakodnevnih učinkih in socialnih posledicah, ki jih opažamo v smeri dehumanizacije tehnologije ali trde digitalizacije.

Ohranjati preteklost in človeške kolektivne spomine je eden izmed ciljev kreativnih industrij. Virtualne aplikacije kulturne dediščine ustvarjajo zgodovino s povabilom uporabnikom, da potujejo nazaj v preteklost. Eden izmed bolj popularnih načinov za stopnjevanje potopitve popotnikov skozi čas v virtualnem prostoru je interaktivno pripovedništvo, ki omogoča uporabnikom učenje, medtem ko raziskujejo.

Medtem ko je proces razvijanja interaktivnih aplikacij digitalnega pripovedništva še vedno kompleksen, so se z vključevanjem profesionalcev z različnih umetniških in znanstvenih disciplin povezale tehnološke opcije z vsebinsko produkcijo. Tehnološki sistemi so sposobni ujeti na stotine tisoč točk v sekundi, in na ta način ustvarjajo zelo točno reprezentacijo artefaktov in celotna kulturno zgodovinska mesta. Podatki na strežnikih ustvarjajo točkovne oblake visoke resolucije z gostoto, ki sega do nekaj sto točk na kvadratni meter. Zaradi pomanjkanja topologije, velike količine podatkov in šuma, so potrebni novi podatkovni procesi, shranjevanje in pristopi upravljanja, preden bodo ti podatki lahko zares uporabni.

Svet virtualne resničnosti (VR), obogatene resničnosti (OR) in mešane resničnosti (MR) raste v izrazito eksponencialnem dvigu. Pogosto smo zmedeni, kje začetni, saj se te tri izkustvene vrste včasih prekrivajo, in je težko razumeti podobnosti in razlike. Vsaka izmed teh virtualnih tipov izkušnje zahteva rahlo drugačno razvojno zgradbo in orodja in v nekaterih primerih nujno cilja na specifični prikaz, ki ga opazovalec uporablja.

Naprave, ki podpirajo obogateno in virtualno resničnost definirajo dva spektra potopitvene tehnologije, ki bi lahko nadomestila mobilno računalništvo. Niz velikih produktov je prišel na tržišče leta 2016 s strani velikih podjetij, vključno z Oculus VR, Sony in Google. Odkar je Facebook odkupil Oculus za 2,1 milijarde dolarjev, je nato pridobil še 11 OR in VR podjetij, ki so utrdile prepričanje, da bosta OR in VR formirala naslednje področje. Velika vlaganja in pridobitve tehnoloških gigantov dajejo slutiti, da bodo te tehnologije postale naraščajoče integrirane s platformami, kjer črpamo vsebine.

Kar razlikuje VR od sorodnih tehnologij, je stopnja potopitve, ki jo obljublja. Ko VR uporabniki pogledajo naokoli v virtualnem svetu, se prilagajajo na enak način, kot če bi se premikali v realnosti. Ključna beseda tu je prisotnost, ključ za tehnologijo in vsebine, ki lahko prevarajo možgane, da verjamemo, da smo nekje, kjer nismo. Ko se izmaknemo virtualnemu dinozavru, ali ne želimo skočiti z imaginarne skalne police, je na delu prisotnost. HTC Vive, Oculus Rift in Google Cardboard so primeri tega tipa potopitve.

Obogatena resničnost (OR) vzame pogled realnega sveta in doda digitalno informacijo in/ali podatke povrh. Te so lahko tako preproste kot številke in tekstovna obvestila, ali tako kompleksna kot so simulirani zasloni. Toda na splošno, OR omogoča, da vidimo oboje, sintetično svetlobo in naravno svetlobo, ki se odbija od objektov v realnem svetu. Pokemon Go je igra, ki sodi v kategorijo, ki temelji na igričarskih karakterjih, lociranih na določenih mapiranih točkah; kakorkoli, karakter, ko ga najdemo, ni pritrjen na to eno točko, ampak se premika okoli našega telefona.

Mešana realnost daje objektu »pritrjene« karakteristike. Google očala so primer tega tipa obogatitve. MR je spoj realnih in virtualnih svetov, da bi ustvarili nova okolja in vizualizacije, kjer fizični in digitalni objekti sobivajo in medsebojno delujejo v realnem času. Najbolj znana naprava za MR so Microsoftove HoloLens. MR ni le nameščen v fizičnem ali virtualnem svetu, ampak je mešanica realnosti in virtualne realnosti. Virtualni objekti so tako natančno zasidrani v realni svet, da se zdijo resnični, vsaj s perspektive osebe, ki lahko vidi MR.

OR že vstopa v javno zavest. Kar se je pričelo kot niša, je končno pospešilo svoje potovanje v splošno javno rabo. Od filmskih studiev in razvijalcev iger do globalnih znamk in oglaševalskih agencij, razvijalci razvijajo bolj in bolj sofisticirane, potopitvene izkušnje za očarano in čustveno navezujočo se občinstvo. Po zadnjih globalnih napovedih bodo tržni izračuni za VR čelade narasli na 22 milijonov dolarjev do 2021 – 800% porast glede na leto 2017. Enako velja za naglavne namestitve za pametne telefone, kot je Samsung Gear VR, ki bodo narasle kar za petkrat, do 70 milijonov dolarjev v istem času. Kljub uspehu 360° video vsebin do zdaj je zabavna industrija ugotovila številne težave te izkušnje, ki preprečujejo pravo potopitev.

Bistvo VR-ja je ustvariti resnični občutek prisotnosti tako, da bi gledalec verjel, da je zares v virtualnem svetu. Čeprav nas tehnološki napredek korakoma približuje cilju, ostajajo številne prepreke. Večina VR izkušenj je oblikovanih tako, da lahko vsebine ogledujemo s čelado, ki je nameščena okoli naših oči kot očala. Stereoskopski 360° video dodaja globino na podoben način kot stereo 3D filmi in čeprav je izkušnja zapeljiva, je globina le na horizontu in iluzija se zalomi takoj, ko začneš dvigovati glavo – svet se premika s tvojo glavo, namesto da bi se glava premikala po virtualnem prostoru. To je eden od razlogov zakaj VR slovi po tem, da je ob njegovi uporabi ljudem slabo.

Reševanje omejitev 360° videa je razvoj volumetričnega filma in pozicijski VR. Podjetja, kot so Lytro s potopitveno kamero na osnovi svetlobnega polja utirajo novo pot. Potopitvena kamera snema globino in razdaljo objekta v okolju. Zatem raje kot da bi šivala podobe skupaj, kot je to v tradicionalni 360 stopinjski kameri, učinkovito poustvarja prizor v 3D virtualnem prostoru. Z zajetjem informacij na celotni svetlobi, ki potuje v senzor kamere, se je možno premikati naokoli v prizoru samem, celo ogledovati pod ali za objektom v prostoru, ustvarjen je resnični občutek prisotnosti. V VR krogih so to poimenovali »šest stopenj svobode«.

Izkušnja je pod vplivom tekočega polja pogleda, ki ga ponujata prva in druga generacija čelad. Človeški binokularni pogled znaša 200° tekočega polja pogleda horizontalno, večina čelad nudi borih 110° – malo čez polovico tega, kar vidimo v realnosti. V VR produkciji smo še daleč od visoke resolucije, ki jo zaznava človeško oko; takoj je jasno, da gledamo skozi zaslon.

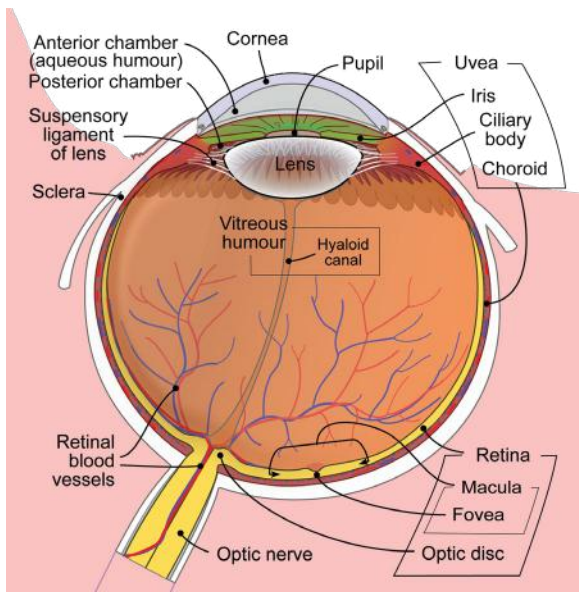
Hologramski telefon – Android iz prve četrtine 2018, Hydrogen One – je telefonski zaslon, hidrogenski holografski prikazovalnik, ki je sposoben prikazati 3D holografsko vsebino brez posebnih očal. Uporablja »večdimenzionalni pogled« ali »4-dimenzionalni pogled«, zaslonsko tehnologijo, ki nadomešča 3D »2-dimenzionalni pogled«. Kmalu bo vseboval tudi modul z dodatki, ki bodo omogočali celo snemanje holografskih podob.

Tango sistem, ki vključuje napredno strojno opremo za hitro mapiranje v notranjih prostorih, kar je idealno za OR aplikacije, je že nekaj let na tržišču in ga že podpirata dve napravi, vendar tržno gledano v majhnem procentu. Tango telefoni so dragoceni vodič po pametnih telefonih v prihodnosti, zaradi OR bodo pametni telefoni potrebovali posebne senzorje in veliko moč procesorjev. OR napreduje in je v trendu in kmalu bomo začeli izbirati telefone glede na OR sposobnosti (zdaj se izbirajo glede na kvaliteto kamere). Stimulacija se odvija tudi v okoljih, kjer kreativci sami izdelujejo naprave (BYOD – bring-your-own-device), v domačih aplikacijah in back-end sistemih; razvijalci lahko računajo na ta segment uporabnikov.

Tudi časovni zastoji v VR lahko izničijo iluzijo. Že najmanjši zastoj na prikazovalniku, glede na premikanje ali ukaz, izniči kakršenkoli občutek resničnosti.

Da bi VR čelade omogočale popolno potopitev, bodo morali razvijalci bistveno napredovati glede »tekočega polja pogleda«, resolucije in časovnih zastojev v virtualnem prostoru. Renderiranje, vezano na očesno foveo, t. i. fovearirano renderiranje – ta tehnika uporablja očesni sledilec, vgrajen v VR čelado, ki zmanjšuje izvajanje delovne obremenitve s tem,

da močno zmanjšuje kvaliteto podobe v perifernem pogledu; to je zunaj cone, ki jo uzre fovea – je nova nastajajoča tehnologija, ki megli VR. To upodobitveno renderiranje, ki posnema način človeškega osredotočanja in procesiranja sveta okoli nas, uporablja detektor pogleda v VR aplikaciji, da zazna, kam uporabnik gleda in tako določi področje pogleda, ki ga skonstruira v najvišji možni resoluciji.



Prav tako kot se človeško oko naenkrat fokusira zgolj na malo okno sveta okoli nas, fovearirano renderiranje riše preostanek našega tekočega vidnega polja v nizki resoluciji. Na ta način se prihrani velikansko količino podatkov, tehnologija lahko bolje podvaja, kako resnično vidimo svet, ustvarja globljo, bolj potopitveno izkušnjo.

Še veliko bomo prehodili, preden bomo dosegli resnično potopitev v VR in OR vsebine, precejšnji razvoj strojne in programske opreme je še potreben.

## Osnovni principi pripovedništva v VR, OR, MR

Model za pripovedništvo se začne z jasnim pregledom, do katerega se dostopa prek spleta ali na kraju samem. Pregled naj se začne z učinkovito „vabo“, ki bo pritegnila bralca; lahko je šokantna, spodbudna, ali čustvena. Pri tem gre za podajanje začetnih informacij skozi „ena vrata“, ki privabijo uporabnike in jih motivirajo za nadaljnje branje. Vstop v VR lahko omogočajo več kot ena vrata. Po začetnem vstopu v zgodbo lahko več ključnih točk predstavlja izhodišče za več vzporednih zgodb. Takšni prilagodljivi pristopi k nelinearnim zgodbam vodijo do hiper-zgodb, v katere se lahko opazovalec potopi. Sledi različnim zgodbam oziroma jih odkriva, te zgodbe pa lahko vodijo tudi ena v drugo, kot neke vrste labirint. Opazovalec oziroma bralec se pri tem uči tako, da ubira različne poti ter raziskuje različne vizije/podobe/stanja duha. Prizorišče VR je pravzaprav gledališki oder, kamor lahko opazovalec vstopa in tam s predmeti in liki stopa v interakcijo. V različnih fazah so na voljo različne zgodbe, lahko pa se pripoveduje tudi ena sama zgodba skozi različne faze/prostore. Pojavljajo naj se jasno opredeljeni glavni junaki/predmeti/podobe, opazovalca pa naj skozi pripoved, mit, zgodbo, nauk, dramo ali žanr vodijo razpoznavni pripovedni loki. Na koncu lahko obstaja več različnih izhodov z različnimi sporočili. Pri tem gre za hiper-resničnost, saj ne obstaja samo en tip občinstva. Izziv lahko predstavlja pripovedništvo, ki upošteva različne vrste obiskovalcev z različnimi ozadji, izkušnjami in starostmi.

*Mark Farid, Seeing I, 2016*





Vsekakor smo na poti k nečemu izjemnemu, smo v jedru industrije vizualnih efektov. Še vedno je prostor za klasično linearno zgodbo. Veliko platno je vseeno daleč najbolj učinkovito za potopitev vanj, dovoljuje udobje in zmanjšan nadzor, da se pustimo odpeljati na potovanje, ki ni naše. Soočeni s hiperrealnostjo, bomo slej ko prej OR in VR vrgli v en koš, saj se bo tehnologija začela prepletati. Znebili se bomo nerodnih čelad in naglavnih namestitvev, kot tudi potrebe, da bi se priključili na močen statični računalnik, takrat ko bo prehod med virtualnim in realnim svetom postal lažji in hitrejši ter ultimativno bolj potopitveni.

Primeri:

### **Dom, VR vesoljski sprehod, BBC in VR studio REWIND**

[www.youtube.com/watch?v=z9qSUXJjhJI](http://www.youtube.com/watch?v=z9qSUXJjhJI)

*Dom*, VR vesoljski sprehod nam omogoča pogled na Zemljo iz vesolja, preden se odpravimo na reševalno misijo. Navdihnjeno z NASA programi usposabljanja, ki se ga je udeležil britanski astronom Tim Peake, projekt omogoča doživetje vesoljskega sprehoda 250 milj nad Zemljino površino, nekaj, kar je zares doživelo samo 217 ljudi. Lara Lewington iz BBC Click si je nadela VR očala, da zadevo preizkusi. Potopitveni projekt *Home: A VR Spacewalk* uporabnikom omogoča, da resnično občutijo, kako je biti astronom, ki lebdi 250 milj nad zemljo in uživa v osupljivih razgledih vesoljske ladje, vesoljske postaje in vesolja samega. Dom lahko doživite s pomočjo haptičnega odzivnega stola, ki poveča občutek potopitve z vibracijami, ki simulirajo fizične vplive vesoljskega sprehoda na telo. Na voljo je tudi biometrični sistem za celotno telo, ki uporabniku omogoča, da med misijo posluša in spremlja svoj srčni utrip.

### **ABBA ponovno na turneji 2019, ampak samo v VR**

[www.digitalspy.com/music/news/a837870/abba-virtual-reality-tour-2019/](http://www.digitalspy.com/music/news/a837870/abba-virtual-reality-tour-2019/)

Ponovna, virtualna združitev švedske pop skupine v letu 2019 za VR doživetje glasbene skupine, ki je razpadla 1982. Pri projektu bodo vsi člani skupine sodelovali, ustvarjalci in producenti projekta bodo uporabili najnovejšo digitalno tehnologijo virtualne resničnosti za izdelavo posebne izkušnje, ki bo novi generaciji oboževalcev omogočila videti, slišati in občutiti skupino ABBA na doslej nepredstavljen način.

### **Karim Ben Khelifa, MIT's Center for Art, Science & Technology: Sovražnik, osebne izkušnje konfliktov v Izraelu/Palestini, Kongu in El Salvadorju**

[mitmuseum.mit.edu/enemy](http://mitmuseum.mit.edu/enemy)  
[opendoclab.mit.edu/enemy-odl-alumnus-karim-ben-khelifa-mit-museum](http://opendoclab.mit.edu/enemy-odl-alumnus-karim-ben-khelifa-mit-museum)

S pomočjo videov s 360° zajemanjem se bodo uporabniki srečali z borci na nasprotujočih si straneh konfliktov v Izraelu/Palestini, Kongu in El Salvadorju. Vsak bo predstavil svoj osebni pogled na vojno, vključno z razmišljanji o razlogih, trpljenju, svobodi in prihodnosti. Razstava vključuje koncepte umetne inteligence ter kognitivne znanstveno utemeljene interaktivne modele.

## **Lynette Wallworth: VR potovanje k avtohtonim prebivalcem zahodnoavstralske puščave: Trčenja, Narodni muzej Avstralije, Canberra**

[www.youtube.com/watch?v=e1C5lxD3P7k](http://www.youtube.com/watch?v=e1C5lxD3P7k)

VR film Collisions režiserke Lynette Wallworth združuje ustno izročilo, film in znanstveno fantastiko v nepozabno potopitveno izkušnjo. Po pričevanjih staroselca z imenom Nyarri Nyarri Morgan film pripoveduje v veliki meri pozabljeno zgodbo o jedrskih poskusih v puščavi Maraling, ki so jih tam izvajali Britanci med leti 1956 in 1963. Ob gledanju VR filma lahko prilagodimo vid tako, da si lahko bolje ogledamo dogajanje in občudujemo izjemno široko vidno polje, ki ga pokrivajo kamere – 360°, gor in dol. Možnost nadziranja tega, kar prikazuje film, z gledanjem navzgor in navzdol ali z vrtenjem naokrog (ter z več premikanja, kot bi si morda mislili), je vsekakor novost. Eksplozija bombe in animirani trenutki so izjemno učinkoviti, zvok in glasba pa prispevata k občutku potopitve, ne da bi pri tem gledalca odvrnila od ganljive zgodbe Nyarri Nyarri Morgana, ki ostaja v središču tega presunljivega 18-minutnega filma.

## **VR zgodba o slikarju Amedeu Modiglianiju, TATE Modern, London**

[www.standard.co.uk/goingout/arts/tate-modern-will-use-virtual-reality-tobring-modiglianis-paris-to-life-a3572976.html](http://www.standard.co.uk/goingout/arts/tate-modern-will-use-virtual-reality-tobring-modiglianis-paris-to-life-a3572976.html)

Kot del najboljše Modiglianijeve razstave vseh časov v Veliki Britaniji, soba virtualne resničnosti obiskovalcem približa umetnikov svet ter obogati njihovo razumevanje njegovega življenja in umetnosti. S povabilom obiskovalcem, naj vstopijo v Pariz v začetku dvajsetega stoletja, slušalke vodilne VR platforme Vive omogočajo potopitveni aspekt interpretacije. Na podlagi arhivskega gradiva in novih raziskav izkušnja rekonstruira vidike Modiglianijevega mesta in oživilja njegov zgodovinski kontekst.

## **Berlinski zid, VR, Newseum, Berlin**

[www.youtube.com/watch?v=7MjY5KwxtxQ&feature=youtu.be](http://www.youtube.com/watch?v=7MjY5KwxtxQ&feature=youtu.be)

<https://www.newseum.org/2017/07/26/berlin-wall-vr-experience-now-open-at-the-newseum/>

V Newseumu lahko obiskovalci za sedem minut stopijo nazaj v času in doživijo komunistični Vzhodni Berlin na vrhuncu hladne vojne. S pomočjo VR očal, slušalk in dveh ročnih krmilnikov se lahko sprehodijo po zapuščenih ulicah Vzhodnega Berlina in si ogledajo komunistične propagandne plakate ter okusijo zatiralsko vzdušje, ki je bilo značilno za obzidano mesto. Čeprav so obiskovalci varno zasidrani v prostoru velikosti 3 krat 3 metre znotraj muzeja, njihovo izkušnjo zaznamuje tesnoba, saj se skušajo izogniti iskalnim žarometom stražnega stolpa, ki na območju „nikogaršnje zemlje“ iščejo prebežnike. Ko se vrnejo na zahodno stran Berlinskega zidu, lahko s pomočjo svojih krmilnikov pomagajo razbiti to desetletja staro barikado svobode.

## **Holger Förterer: Zvok stvari, ZKM, Karlsruhe**

[vimeo.com/61766546](https://vimeo.com/61766546)

Zvok stvari je interaktivna zvočna instalacija. Na mizi so postavljeni vsakdanji predmeti: kup papirjev, kozarec za vino, sveče, svetilka. Ko si obiskovalec natakne slušalke, zasliši zvok vseh predmetov na mizi. Tridimenzionalno zvočno krajino doživlja in raziskuje s premikanjem glave ali sprehajanjem po prostoru.

## **MediaMonks and the Zoo: V divjino, Smithsonian National Museum of Natural History, Washington**

[www.commarts.com/exhibit/into-the-wild-ar-app](http://www.commarts.com/exhibit/into-the-wild-ar-app)

V divjino je Google Tango doživetje, s pomočjo katerega se muzej spremeni v virtualni deževni pragozd, ki ga lahko fizično raziskujemo tako, da se sprehodimo po muzeju. Aplikacija združuje računalniški vid in obogateno resničnost, kar obiskovalcem omogoča, da iz prve roke spoznamo uničujoče učinke krčenja gozdov.

(Se nadaljuje ...)

Aleksandra Kostič

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Besedilo je delno povzeto po dokumentu s področja virtualnih medijev in kulturne dediščine v okviru evropskega projekta ViMM (Virtual Multimodal Museum), ki se je zaključil 2019. KIBLA je sodelovala pri projektu kot ena izmed sedmih koordinatorjev strokovnjakov na treh vsebinskih področjih: Tehnologija in orodja, Pomenljive vsebine nasproti resničnemu svetu in Prihodnost v mislih.

[www.vi-mm.eu](http://www.vi-mm.eu)

*In the time package 2019–2023, Kiblix Festival turns to research and critique of contemporary technological media, as well as their soft applications in contemporary arts, culture and education.*

## **LEVEL OF PRESENCE**

### **Lesson ∞: virtual, augmented and mixed reality**

*With every technological medium, the *conditio sine qua non* is the technology that functions flawlessly – because during the conceptualization, and during the stage when technical demands meet content, or in other words, during the implementation of ideas and concepts in creative labs, things always get complicated due to a lack of effective technological support. Under the auspices of big corporations, there is a deliberate and systematic support of an increasingly fast-growing development of major technological breakthroughs, while a constant optimization of technology is the result of countless studies and focused work, in order to offer to the market hardware and software for creating new visions and products for diverse users.*

*According to a recent estimate by Goldman Sachs, AR and VR are expected to grow into a \$95 billion global market value by 2025. The strongest demand for the technologies currently comes from industries in the creative economy – specifically, gaming, live events, video entertainment and retail – but will find wider applications in industries as diverse as healthcare, education, the military, real estate, cultural heritage, and the arts.*

*Art medium, yes or no? On the one hand, it is about mapping, about the imitation of an artwork, about gallery setups, archiving, documenting, historicizing. On the other hand, it is about the medium as art, which is not necessarily image-forming, but can explore the medium as such, together with its boundaries; i.e., a creative upgrade of the medium, a creative use of the medium. As long as one is not familiar with the medium in terms of the processes and procedures it requires, one cannot manipulate it, be creative with it, or think about it critically – except in terms of the everyday effects and social impacts, which we observe in the sense of dehumanization of technology, or hard digitalization.*

*Preserving the past and human collective memories is one of the objectives of creative industries. Virtual cultural heritage apps create history by inviting users to travel back in time. One of the more popular ways to increase the immersion of travelers through time in the virtual space is through interactive storytelling that allows users to learn while exploring.*

*While the process of developing interactive digital storytelling applications is still a complex one, technology options have been linked to content production through the involvement of professionals from different artistic and scientific disciplines. Technological systems are capable of capturing hundreds of thousands of points per second, creating a highly accurate representation of artifacts and entire cultural and historical sites. On servers, data creates high-resolution point clouds with a density that reaches up to several hundred points per square meter. Due to a lack of topology and the large amount of data and noise, new data processes, storage and management approaches will be required before this data can really become useful.*

*The world of Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) is rising exponentially. It can be confusing to know where to begin, because the three types of experiences seem to overlap at times, making it difficult to understand the similarities and differences. Each experience requires a slightly different development stack and tools, and in some cases necessitates targeting the specific display the observer is using.*

*Devices employing augmented and virtual reality define two spectrums of immersive technology that could replace mobile computing. A range of major products came to market in 2016 from companies including Oculus VR, Sony and Google. Since it bought Oculus for \$2.1 billion, Facebook has acquired a further 11 AR and VR companies, underscoring the company's view that AR and VR will form the next frontier. The large investments and acquisitions by tech giants suggest that these technologies will become increasingly integrated with the platforms on which we consume content.*

*What distinguishes VR from adjacent technologies is the level of immersion it promises. When VR users look around their view of that world adjusts the same way it would if they were looking or moving in real reality. The key buzzword here is presence, shorthand for technology and content that can trick the brain into believing it is somewhere it's not. When you flinch at a virtual dinosaur, or don't want to step off an imaginary ledge, that's presence at work. HTC Vive, Oculus Rift and Google Cardboard are examples of this type of immersion.*

*Augmented reality (AR) takes your view of the real world and adds digital information and/or data on top of it. This might be as simple as numbers or text notifications, or as complex as a simulated screen. But in general, AR lets you see both synthetic light as well as natural light bouncing off objects in the real world. Pokemon Go is a game that fits this category based on the game's characters located at certain points on maps; however, the character, when found, is not tethered in that one spot as it moves around as your phone moves.*

*Mixed reality would give the object a "tethered" characteristic. Google Glass is the example of this type of augmentation. MR is the merging of real and virtual worlds to produce new environments and visualizations where physical and digital objects co-exist and interact in real time. The primary headset for MR today is the Microsoft HoloLens. Mixed reality takes place not only in the physical world or the virtual world, but is a mix of reality and virtual reality. It anchors those virtual objects to a point in real space, making it possible to treat them as "real," at least from the perspective of the person who can see the MR experience.*

*AR has already begun to enter the public consciousness. What began as a niche is finally accelerating in its journey towards popular use. From film studios and games developers to global brands and advertising agencies, developers are creating more and more sophisticated, immersive experiences to captivate and emotionally engage audiences. In its latest global forecast, CCS Insight predicts sales of dedicated VR headsets to grow to 22 million dollars by 2021 – an 800 percent increase versus 2017. The same report claims sales of smart phone headsets, such as Samsung's Gear VR, will grow five-fold to 70 million dollars during the same period. Despite the success of 360-degree video content to date, the entertainment industry has encountered numerous problems in achieving true immersion within those experiences.*

*The essence of VR is to create a true sense of presence by making the viewer believe they're truly inside the virtual world. But while every technological advancement brings us a step closer, there remain a number of hurdles to overcome. Most VR experiences are designed to be viewed on a headset strapped around your eyes like goggles. Stereoscopic 360° video adds depth in a similar way to stereo 3D movies but, while the experience is compelling, the depth is only on the horizon and the illusion breaks as soon as you start to shift your head – the world moves with your head, rather than your head moving within the world. This is one of the reasons VR in particular has a reputation for making people feel sick.*

*Solving the limitations of 360° video is the development of volumetric video and positional VR. Companies like Lytro with its light-field Immerge camera are carving a new path in immersive content. The Immerge camera records the depth and distance of objects in an environment. Then, rather than stitching images together like a traditional 360-degree camera, it effectively recreates the scene in a 3D virtual space. By capturing information on all light passing into the camera sensor, it's possible to move around inside a scene, even looking under or behind objects, creating a true sense of presence. This has been termed 'six degrees of freedom' in VR circles.*

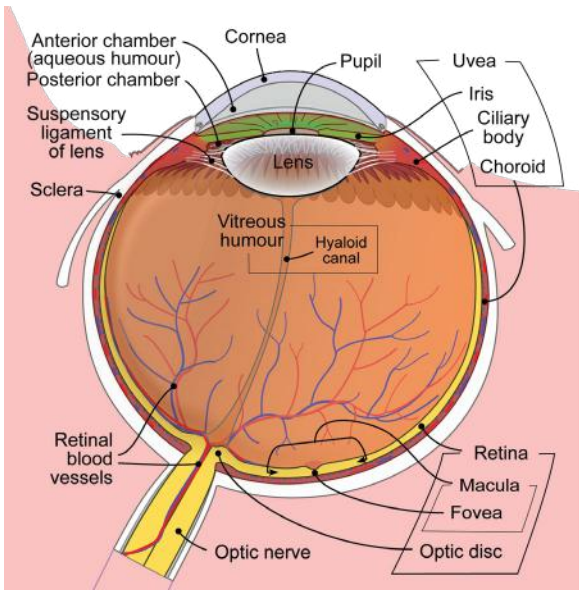
*The experience is also impacted by the current field-of-view offered by first- and second-generation headsets. Our binocular vision makes the human field-of-view around 200° horizontally, but most headsets give a measly 110° – just over half of what we see in reality. We are also still a long way off creating experiences of as high a resolution as we see with the human eye; it is immediately evident we are watching via a screen.*

*A hologram phone, such as the Android released in the first quarter of 2018, the Hydrogen One, is a phone screen, a hydrogen holographic display capable of showing 3D holographic content without special glasses. It uses "multi-view" or "4-view" display technology that replaces the 3D "2-view" approach. It will soon become modular with accessories that will even allow the recording of holographic images.*

*The Tango system involves advanced hardware for rapidly mapping an indoor environment, which is ideal for AR applications, has been on the market for a few years now, and is supported by two devices, although by an insignificant percentage of the Android market. Tango phones serve as a guidebook to the future of smart phones. Because of AR, smart phones will need special sensors and massive processing power. AR is on the rise, it is trending, and soon we will start choosing phones based on AR capabilities (much like we now choose them based on camera quality). This prediction applies to enterprise employees in BYOD (bring-your-own-device) environments, too. Just as in-house apps and back-end systems developers can count on BYOD devices sporting camera electronics, they will soon count on them to do advanced AR.*

*Latency, too, can undo the illusion. Even the tiniest delay in the display reacting to a movement or command dissolves any sense of reality. To achieve full immersion, headsets need to drastically improve by the current field of view (FOV), resolution and latency. Foveated rendering is another emerging technology making waves in VR. Foveated rendering is a rendering technique which uses an eye tracker integrated with a virtual reality headset to reduce the rendering workload by greatly reducing the image quality in the peripheral vision (outside of the zone gazed by the*

fovea). The image rendering technique, which mimics the way humans focus on and process the world around them, uses gaze detection to tell the VR application where the user is looking and therefore which area of the view to construct in high definition.



Just as the human eye only focuses on a small window of the world around us at any one time, foveated rendering draws the rest of our FOV at lower resolutions. As well as saving an enormous amount of pixel data, the technology better replicates how we truly see the world, creating a deeper, more immersive experience.

We have a way to go before we reach true immersion in VR and AR content, with major developments in both software and hardware still to be made.



## **Basic Principles of Storytelling in VR, AR, MR**

*A model for storytelling starts with a clear over-tour, which could be possible to approach online or on-site. An over-tour should start with a story hook, effective and catchy; shocking, interesting or emotional. Giving an initial information through "one door" to invite users and motivate them to go further. It is possible to have more than one door to enter VR. Starting with a basic story entrance, several key points could open into several parallel stories. Such flexible approaches to non-linear stories lead to hyper stories, where an observer can be immersed. He is following or better discovering different stories which could lead one into another as a kind of labyrinth and learning by going through different paths, researching different visions/images/states of mind. The VR stage is actually a theater stage where an observer is aloud to enter and to interact with objects and characters on the stage. Different stages have different stories or one story could be told through different stages/spaces. Clearly defined main characters/objects/images should appear and visible narrative arcs should lead an observer through a fable, a myth, a plot, a moral, a drama or a genre. At the end could be several different exit locations with different messages provided. This is a hyper reality option, considering there is no one type of the audience. Challenging would be a storytelling respective to different types of visitors, with different backgrounds, experiences and ages.*



*We are definitely on the path to something extraordinary, at the core of the visual effects industry. There will always be a place for the classic linear story. The big screen has thus far proven effective in immersing audiences because sometimes we do just want to sit back, relinquish control and be taken on a journey that isn't our own. But we are heading towards 'hyper' reality and, eventually, we will drop the AR and VR monikers altogether as the technologies begin to intertwine. We will also lose the clunky headsets and the need to plug into a powerful, static computer, as the switch between the virtual and the real world becomes easier and quicker, and ultimately more immersive.*

Examples:

### **VR spacewalk lets you fly over Earth - BBC Click**

[www.youtube.com/watch?v=z9qSUXJjhJI](http://www.youtube.com/watch?v=z9qSUXJjhJI)

*A VR Spacewalk lets you look down on the Earth from space before going on an emergency mission. BBC Click's Lara Lewington put on her VR headset to see what it was like. The immersive nature of 'Home: A VR Spacewalk' means that users will really get to feel what it's like to be an astronaut floating 250 miles above earth with stunning and vast views of the spaceship, the space station and the universe. Home can be experienced using a haptic feedback chair, adding to the sense of immersion as vibrations simulate impacts of the spacewalk to the body. There is also a full body biometric system which allows the user to hear and monitor their own heartbeat during the mission.*

### **Participating (recreated) historical events in VR, e.g. Abba's concert, Abba**

Article: [www.digitalspy.com/music/news/a837870/abba-virtual-reality-tour-2019/](http://www.digitalspy.com/music/news/a837870/abba-virtual-reality-tour-2019/)

*The Swedish pop group are reuniting for a new entertainment experience in 2019. The project will use the very latest in digital and virtual reality technology to build an original entertainment experience, which will enable a new generation of fans to see, hear and feel ABBA in a way previously unimagined.*

### **Personal experiences of conflicts in Israel/Palestine, the Congo, and El Salvador: The Enemy by Karim Ben Khelifa, MIT's Center for Art, Science & Technology**

[mitmuseum.mit.edu/enemy](http://mitmuseum.mit.edu/enemy)

Article: [opendoclab.mit.edu/enemy-odl-alumnus-karim-ben-khelifa-mit-museum](http://opendoclab.mit.edu/enemy-odl-alumnus-karim-ben-khelifa-mit-museum)

*Through 360-degree imaging and recordings, participants will encounter combatants on opposite sides of conflicts in Israel/Palestine, the Congo, and El Salvador. In their own words, each will offer personal perspectives on war, including thoughts on motivations, suffering, freedom, and the future. The exhibition incorporates concepts from artificial intelligence and cognitive science-based interaction models.*

## **VR Journey to the indigenous people in Western Australian desert: Collisions**

(Emmy award-winning film by Lynette Wallworth), National Museum Australia

[www.youtube.com/watch?v=e1C5lxD3P7k](http://www.youtube.com/watch?v=e1C5lxD3P7k)

Lynette Wallworth's 'Collisions' virtual reality film blends oral history, film, and sci-fi into a visceral immersive experience. Collisions tells the largely forgotten story of the Maralinga nuclear tests by the British between 1956 and 1963, largely through the words of Indigenous elder Nyarri Nyarri Morgan. Watching a VR film, we are able to adjust the vision to be able to view the film and to marvel at the extremely wide field of vision covered by the cameras - 360 degrees, up and down. It's certainly a novelty to be able to control what you see in a movie by looking up and down and spinning around (and moving about more than expected). The bomb blast and animated moments are effective and the sound and music contributed to the feeling of immersion without detracting from the poignant humanity of Nyarri Nyarri Morgan's story at the centre of the fascinating and poignant 18-minute film.

## **VR Story about painter Amedeo Modigliani, TATE Modern**

Article: [www.standard.co.uk/goingout/arts/tate-modern-will-use-virtual-reality-to-bring-modiglianis-paris-to-life-a3572976.html](http://www.standard.co.uk/goingout/arts/tate-modern-will-use-virtual-reality-to-bring-modiglianis-paris-to-life-a3572976.html)

As part of the most comprehensive exhibition of Modigliani's work ever held in the UK, the virtual reality room will bring visitors closer into the artist's world, enriching their understanding of his life and art. Headsets from the leading VR platform Vive will provide an immersive layer of interpretation as visitors are invited to step into early twentieth century Paris. Drawing on archival material and new research, the experience recreates aspects of Modigliani's adopted city, bringing his historical context to life.

## **VR story about the Berlin wall: Berlin Wall: The Virtual Reality Experience, Newseum**

Video: [www.youtube.com/watch?v=7MjY5KwxtxQ&feature=youtu.be](http://www.youtube.com/watch?v=7MjY5KwxtxQ&feature=youtu.be)

Article: <https://www.newseum.org/2017/07/26/berlin-wall-vr-experience-now-open-at-the-newseum/>

At the Newseum, visitors can now step back into time for seven minutes and experience communist East Berlin at the height of the Cold War. Using a VR headset, headphones and two hand-held controllers, visitors can walk through the deserted streets of East Berlin and witness the communist propaganda posters and austere atmosphere that characterized the walled-off city. Although visitors are safely tethered within a 10-foot-by-10-foot space inside the museum, their experience is punctuated by the anxiety of dodging the guard tower searchlights that sweep "no-man's land" looking for wall jumpers. Once back on the West Berlin side of the wall, visitors can use their controllers to help break down the decades-old barrier to freedom.

## **The Sound Of Things**

[vimeo.com/61766546](https://vimeo.com/61766546)

*The Sound of Things is an interactive sound installation. Ordinary things are lying on a table: a stack of papers, a wine glass, candles, a lamp. When the visitor puts on headphones, all items on the table start to sound to him. The observer can experience and explore this three-dimensional sound-scape by moving his head and wandering about.*

## **Into the Wild**

[www.commart.com/exhibit/into-the-wild-ar-app](http://www.commart.com/exhibit/into-the-wild-ar-app)

*Into the Wild is a Google Tango experience that transforms the ArtScience Museum into a virtual rainforest you can physically explore by walking through the museum. The app combines computer vision and augmented reality to let visitors learn about devastating effects of deforestation first hand.*

*(To be continued...)*

*Aleksandra Kostič*

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*The text is partly adopted from a virtual media and cultural heritage document created as part of the EU Virtual Multimodal Museum (ViMM) project, completed in 2019, where KIBLA participated as one of seven expert coordinators in three content areas: Technology and Tools, Meaningful Content Versus the Real World, and The Future in Mind.*

[www.vi-mm.eu](http://www.vi-mm.eu)



Paul McCarthy, C.S.S.C. Coach Stage Stage Coach VR experiment Mary and Eve, 2017 (z dovoljenjem umetnika in Khora Contemporary / Courtesy of the artist and Khora Contemporary)

# Navidezna umetnost

## VR RAZSTAVA

Navidezna resničnost postaja vedno bolj tudi resnična resničnost in okolje ustvarjanja umetnosti. Povezali smo se s Khora Contemporary iz Kopenhagna, Danska, ki z umetniškimi projekti preučuje zmožnosti in učinkovanja sodobnih tehnologij. Umetnikom in umetnicam nudijo ustrezno pomoč, da razvijejo in sprostijo domiselne vizije in raziskujejo nov medij in njegove izraznosti.

Khora Contemporary spada med pionirje uporabe fascinantnega novega medija, ki skozi umetniška dela zagotavlja vrhunsko kakovost gledalčeve izkušnje. Na njihovem seznamu so svetovni umetniki in umetnice – ameriška **Tony Oursler** in **Paul McCarthy**, nemški **Christian Lemmerz**, nemško-ameriški **Erik Parker**, kitajska **Yu Hong** in ukrajinski **Nikita Shalenny** – ki jih predstavljamo tudi pri nas.

V izbranih umetniških stvaritvah navidezne resničnosti spoznavamo, kaj so ustvarili s pomočjo tehnologije, kako obravnavajo prostor in interaktivnost, kako plastijo posamezne elemente in jih umeščajo v okolja, do kod jih in nas prevzamejo širine in globine zamišljenih ambientov in koliko nanje lahko vplivamo in v njih počnemo. Z revijo VR del seznanjamo javnost z novim področjem in vzpodbujamo slovenske umetnice in umetnike, da spoznajo medij, pričnejo razmišljati v njegovih kontekstih in se ga morda lotijo. Tudi slovenska scena je aktivna.

O vse večji uveljavljenosti navidezne resničnosti pričajo tudi avtorsko izrazita, konceptualno in vsebinsko samosvoja potopitvena okolja, kot so si jih zamislili vizualni in performans umetniki in umetnice, **Marina Abramović**, **Olafur Eliason**, **Anish Kapoor**, **Jeff Koons**. Delo **Chalk Laurie Anderson** in **Hsin-Chien Huanga** je bilo na 47. mednarodnem filmskem festivalu v Benetkah, 2017, nagrajeno za **Najboljšo VR izkušnjo**. **Alejandro González Iñárritu** je za instalacijo **Carne y Arena / Meso in pesek**, 2017, ki je bila prvi projekt navidezne resničnosti na filmskem festivalu v Cannesu, prejel tudi **Oskarja za posebne dosežke**.

Lahko se sprašujemo, kakšne bodo posledice tega kompleksnega skupka tehnologij, ki se dandanes razvijajo, nas bo razbremenil ali obremenil, bo dvignil samo-spoznanje in človekovo zavest ali bo zgolj praktični pripomoček za prosti čas, igranje in fokusirano trženje določenih produktov. Dejstvo je, da obstaja. In umetnost lahko tehnologijo humanizira, preizprašuje kanone in preizkuša njene omejitve.

Razne aplikacije in predstavitve v navidezni resničnosti so že del razstav v galerijah in muzejih, samo vprašanje časa pa je, kdaj bodo tovrstne umetnine vstopile v stalne zbirke muzejev in drugih institucij, kdaj bodo prisotne v javnih prostorih in postale inventar naših dnevnih sob, če to ponekod že niso.

Razstavo bo odprla umetniška vodja **Khora Contemporary Allegra Shorto**.

Peter Tomaž Dobrila



*Christian Lemmerz, TRAUM, 2018 (z dovoljenjem umetnika in Khora Contemporary/ Courtesy of the artist and Khora Contemporary)*

## Virtual art

### VR EXHIBITION

*Virtual reality is increasingly becoming a real reality, and a milieu of art creation. We are working alongside Khora Contemporary from Copenhagen, Denmark, whose team explores the capabilities and impact of modern technology through art projects. They provide artists with the appropriate support in developing and unleashing their creative visions and exploring this new medium and its expressions.*

*Khora Contemporary is one of the pioneers of using a fascinating new medium that delivers the highest quality viewer experience through art works. On their list are world-class artists – Tony Oursler and Paul McCarthy (USA), Christian Lemmerz (DE), Erik Parker (DE/USA), Yu Hong (CN) and Nikita Shalenny (UA) – all of whom are featured as part of Kiblix festival.*

*Through selected artworks of virtual reality we learn about what has been created with technology, how artists are concerned with the space around them and with interactivity, how they layer individual elements and map them inside environments, to what extent they, and we, are taken by the widths and depths of the designed ambiances, and how much we can influence them. We are showcasing VR works to acquaint the public with an emerging field and encourage Slovenian artists to get to know the medium, to start considering its context, and perhaps, to begin working in it. Things are happening in Slovenia in this area as well.*

*The rapidly establishing virtual reality is also evidenced by decisively authorial, conceptually and materially unique immersive environments, as conceived by visual and performance artists Marina Abramović. Olafur Eliason, Anish Kapoor, Jeff Koons. The work Chalk by Laurie Anderson and Hsin-Chien Huang received the Best VR Experience award at the 47th Venice International Film Festival 2017. Alejandro González Iñárritu received a special Oscar statuette in recognition of a visionary and powerful experience in storytelling for his installation Carne y Arena / Meat and Sand, 2017, which was the first VR project ever at the Cannes Film Festival.*

*We may wonder what the consequences of this complex set of technologies that are developing today will be; will it relieve or burden us, will it raise self-awareness and human awareness, or is it merely going to be a practical tool for spare time, for game playing and focused marketing of certain products. It is a fact it exists. And art can humanize technology, re-question its canons, and test its limitations.*

*Various virtual reality applications and presentations are already part of exhibitions in galleries and museums, and it is only a matter of time before such artworks will enter permanent collections of museums and other institutions, as well as public spaces, and become part of the inventory in our own living rooms, although in some places, they already are.*

*The exhibition will be opened **Allega Shorto, Art Director of Khora Contemporary.***

Peter Tomaž Dobrila

## Khora Contemporary

**Khora Contemporary** je zasnovana kot most med umetniki in razvijalci virtualne resničnosti. Umetnikom nudimo najboljšo asistenco pri razvoju in sprostitvi njihovih domišljjskih vizij med raziskovanjem tega novega medija in neomejenih možnosti njegove uporabe. Ponujamo jim priložnost za umetniško raziskovanje globin virtualne resničnosti in iskanje navdiha za ustvarjanje novih del. Z najsodobnejšo tehnologijo in vznemirljivim seznamom umetnikov, ki so pripravljeni sodelovati, bo Khora Contemporary zagotovo postalo pionirsko podjetje na področju tega osupljivega novega medija, ki zagotavlja najboljšo kakovost gledalčeve izkušnje.

Zgolj vprašanje časa je, kdaj bodo umetniška dela virtualne resničnosti naselila stalne zbirke muzejev, javne prostore in naše dnevne sobe. Glede na strokovno znanje Khore na področju virtualne resničnosti in dolgoletno prisotnost fundacije Faurshou v najbolj profesionalnem segmentu sveta umetnosti, je Khora Contemporary povsem pripravljena na širjenje umetniške prakse v mediju virtualne resničnosti. Naše poslanstvo je etabrirati široko rabo tehnologije virtualne resničnosti kot umetnostnega medija, in se uveljaviti kot vodilno produkcijsko podjetje na področju VR umetnosti, pri čemer umetnika postavljamo v središče procesa. Khora Contemporary je čopič, s katerim umetnikove ideje oživijo v virtualni resničnosti.

*Khora Contemporary was created to become a bridge between the artists and Virtual Reality developers. We provide artists with best assistance to develop and unleash their imaginative visions exploring this new media and its limitless possibilities. We offer opportunity for artists to research the depths of VR and find inspiration to create a new body of work. With the latest technology at hand and an exciting list of artists in the pipeline, Khora Contemporary is set to become a pioneer of this fascinating new medium, assuring the best quality of the viewer experience.*

*It is only a matter of time before Virtual Reality artworks populate the permanent collections of museums, public spaces and our living rooms. Given Khora's expertise in the Virtual Reality field and Faurshou Foundation's longstanding presence in the most professional segment of the art world, Khora Contemporary is well equipped to expand artistic practice within the Virtual Reality medium. Our mission is to establish the Virtual Reality technology as a widely applied media within the arts, asserting ourselves as the Virtual Reality Art production company of choice in the art world. Our vision is to put the artist at the center of the process. Khora Contemporary is the paintbrush which makes the artists idea come alive in VR.*

[khoracontemporary.com](http://khoracontemporary.com)





**Allegra Shorto** ima izkušnje s kuratorstvom v sodobni umetnosti in se je pridružila ekipi Khora Contemporary iz kuratorske ekipe fundacije za okoljsko umetnost TBA21-Academy. Je redno zaposlena v Khora Contemporary, kjer vzpostavlja vezi med umetniki in institucijami, z namenom promoviranja široke rabe medija virtualne resničnosti v umetnosti.

**Allegra Shorto** has a background in contemporary art curation and came to Khora Contemporary from the curatorial team of environmental arts foundation TBA21-Academy. She now works full time at Khora Contemporary liaising between artists and institutions to establish Virtual Reality as a widely applied medium within the arts.

Umetniki in umetnice / Artists:

## CHRISTIAN LEMMERZ



Christian Lemmerz, *TRAUM*, 2018 (z dovoljenjem umetnika in Khora Contemporary / Courtesy of the artist and Khora Contemporary)

## PAUL MCCARTHY



Paul McCarthy, *C.S.S.C. Coach Stage Stage Coach VR experiment Mary and Eve*, 2017 (z dovoljenjem umetnika in Khora Contemporary / Courtesy of the artist and Khora Contemporary)

## YU HONG



*Yu Hong, She's Already Gone, 2017 (z dovoljenjem umetnice in Khora Contemporary / Courtesy of the artist and Khora Contemporary)*

## MICHAEL TAKEO MAGRUDER

VR umetnost v post-digitalni dobi: estetska in kritična raziskovanja virtualnih tehnologij in kontekstov v sodobni umetnosti

***VR Art in the Post-Digital Age: aesthetic and critical explorations of virtual technologies and contexts in contemporary art practice***

### PREDAVANJE / LECTURE

V predavanju bo vizualni umetnik in raziskovalec Michael Takeo Magruder (ZDA/VB; [www.takeo.org](http://www.takeo.org)) govoril o svojem delu, pri katerem združuje virtualna okolja v realnem času in potopitvene tehnologije s sodobno umetniško prakso. Michael bo predstavil in razpravljal o lastnih mednarodno uveljavljenih projektih s tega področja, ki jih je skupaj s sodelavci realiziral v obdobju zadnjih dvajsetih let.

*In this lecture, visual artist and researcher Michael Takeo Magruder (US/UK, [www.takeo.org](http://www.takeo.org)) will discuss his work using real-time virtual environments and immersive technologies within contemporary art practice. Michael will showcase and discuss several of his internationally-acclaimed projects in this area that he and his collaborators have produced over the past twenty years.*

Imaginarna mesta / Imaginary Cities

[www.bl.uk/events/imaginary-cities/](http://www.bl.uk/events/imaginary-cities/)

De/kodiranje apokalipse / De/coding the Apocalypse

[www.takeo.org/nospace/2014-decoding-the-apocalypse/](http://www.takeo.org/nospace/2014-decoding-the-apocalypse/)

Podatkovno morje / Data Sea

[www.takeo.org/nospace/ns036/](http://www.takeo.org/nospace/ns036/)

Vizije naših skupnih sanj / Visions of Our Communal Dreams

[www.takeo.org/nospace/sl010/](http://www.takeo.org/nospace/sl010/)



Michael Takeo Magruder Imaginary Cities, NYC(11062471656) instalation in Imaginary Cities Britis Library, London, 2019

## DELAVNICA / WORKSHOP

Na delavnici bo vizualni umetnik Michael Takeo Magruder skozi izmenjavo izkušenj in diskusijo predstavil več svojih nagrajenih umetniških projektov, v katerih so uporabljene virtualne tehnologije ter VR očala zadnje generacije. Udeležence vabimo, naj s seboj prinesejo lastne VR projekte oz. koncepte v nastajanju ter se o njih pogovorijo z Michaelom in ostalimi sodelujočimi.

*In this sharing and discussion workshop, visual artist Michael Takeo Magruder will demonstrate several of his award-winning art projects that use virtual world technologies and the latest generation of VR headsets. Participants are invited to bring their own work-in-progress VR projects and concepts to discuss with Michael and the group.*



**Michael Takeo Magruder** je vizualni umetnik in raziskovalec, ki deluje na področju digitalnih in novih medijev, med drugim z informacijami v realnem času, potopitvenimi okolji, mobilnimi napravami in virtualnimi svetovi. V svoji praksi raziskuje koncepte, kot so medijske kritike in estetsko novinarstvo, digitalni formalizem in računska estetika ter uporaba tehnologij in sistemov informacijske dobe za raziskovanje omreženega medijsko bogatega sveta. V zadnjih dvajsetih letih so bila Michaelova dela predstavljena na več kot 290 razstavah v 35 državah, obenem pa so njegove projekte podprle in sofinancirale številne institucije in javne galerije v Združenem kraljestvu, Združenih državah Amerike in ostalih državah Evropske unije.

*Michael Takeo Magruder is a visual artist and researcher who works with new media including real-time data, digital archives, immersive environments, mobile devices and virtual worlds. His practice explores concepts ranging from media criticism and aesthetic journalism to digital formalism and computational aesthetics, deploying Information Age technologies and systems to examine our networked, media-rich world. In the last 20 years, Michael's projects have been showcased in over 290 exhibitions in 35 countries, and his art has been widely supported by numerous funding bodies and public galleries within the UK, US and EU.*

[www.takeo.org](http://www.takeo.org)



## MARK FARID

### Seeing I

#### PREDAVANJE / LECTURE

**Seeing I, 2020:** 14 dni bo umetnik Mark Farid 24 ur na dan nosil VR očala ter izkusil življenje skozi oči in ušesa ene osebe: slišal oziroma videl bo le to, kar sliši oziroma vidi ta oseba.

Po navdihu Eksperimenta v zaporu Stanford psihologa Philipa Zimbarda (1971), Simulakra in simulacije filozofa Jeana Baudrillarda (1981) in dela umetnika Josha Harrisa Tišina: Živimo v javnosti (1999) bo projekt z naslovom Seeing I umetnika Marka Farida omejil na galerijski prostor, kjer bo podvržen simuliranemu življenju projektnega Drugega. Kako bo neprekinjen tok umetnih pogledov in zvokov začel vplivati na umetnikov lastni notranji monolog, glede na to, da odnos z Drugim ne obstaja? Mark Farid v času trajanja projekta ne bo imel stikov z ljudmi, ki bi bili pomembni (prisotni) v njegovem resničnem življenju. Na ta način bo njegov posredni odnos z Drugim postal osrednja pripoved tega umetniškega projekta.



Mark Farid, *Seeing I*, 2016

Projekt *Seeing I* dihotomijo prirojeno-ali-privzgojeno prilagodi digitalni dobi, pri čemer obravnava vprašanje, kolikšen delež posameznika je prirojeni jaz in kolikšen delež je posledica okolja in kulture. Kako bo teh 14 dni spremenilo Faridovo gibanje, njegove posebnosti, njegovo osebnost in predvsem njegov način razmišljanja? Ali bo brez možnosti svobodne odločitve o tem, kdo in kakšen je, Faridova zavest dovolj, da prepreči bistvene spremembe?

V predavanju bo Mark predstavil koncept, etične dileme in tehnološke vidike projekta, vključno z različnimi (umetniškimi) strategijami, pristopi in metodami, ki jih uporablja v svoji praksi. Predstavil bo tudi poskusno različico projekta *Seeing I*, ki jo je izvedel na letošnji izdaji festivala Ars Electronica v Linzu, ter njeno delovanje.

**Seeing I, 2020:** For 24-hours a day, for 14-days, artist Mark Farid will wear a virtual reality headset, experiencing life through the eyes and ears of one person; hearing only what they hear and seeing only what they see for two weeks.

*Inspired by Psychologist Philip Zimbardo's 'Stanford Prison Experiment' (1971), Philosopher Jean Baudrillard's 'Simulacra and Simulation' (1981), and Artist Josh Harris' 'Quiet: We Live in Public' (1999), Seeing I will confine Farid to a gallery space, subject to the simulated life of the project's Other. With no existing relationship to the Other, how will the constant stream of artificial sights and sounds start to displace Farid's own internal monologue? For the duration of the project, Farid will experience no human interaction relative to his own life, allowing his indirect relationship with the Other to become his leading narrative.*

*Adapting the question of nature vs. nurture to the digital age, Seeing I will consider how large a portion of the individual is an inherent self, and how large a portion is a consequence of environment and culture. How will the 14-days alter Farid's movement, mannerisms, personality, and most importantly, his rationale? Without free will to determine and shape who he is, will Farid's consciousness be enough to deter significant change?*

*In his talk, Mark will present the project's conceptual threads, ethical concerns and technological aspects including different (artistic) strategies, approaches and methods he uses in his practice. Moreover, Mark will present the trial run of Seeing I which took place at this year's Ars Electronica in Linz and its further implications.*

[www.seeing-i.co.uk](http://www.seeing-i.co.uk)

## **DELAVNICA / WORKSHOP**

Mark Farid bo v sklopu neformalnega pogovora oziroma delavnice predstavil projekta Data Shadow (Podatkovne sence) (2015) in Poisonous Antidote (Strupeno protisredstvo) (2016), v katerih obravnava zasebnost podatkov in zadevne vladne zakone. Pogovor bo vključeval kratek prikaz na temo zasebnosti podatkov, v katerem bodo lahko prostovoljno sodelovali vsi udeleženci, prav tako pa bodo predstavljeni tudi koraki, ki jih je naredil Mark na poti razvijanja svoje prakse, od prvega letnika na univerzi do diplomiranja.

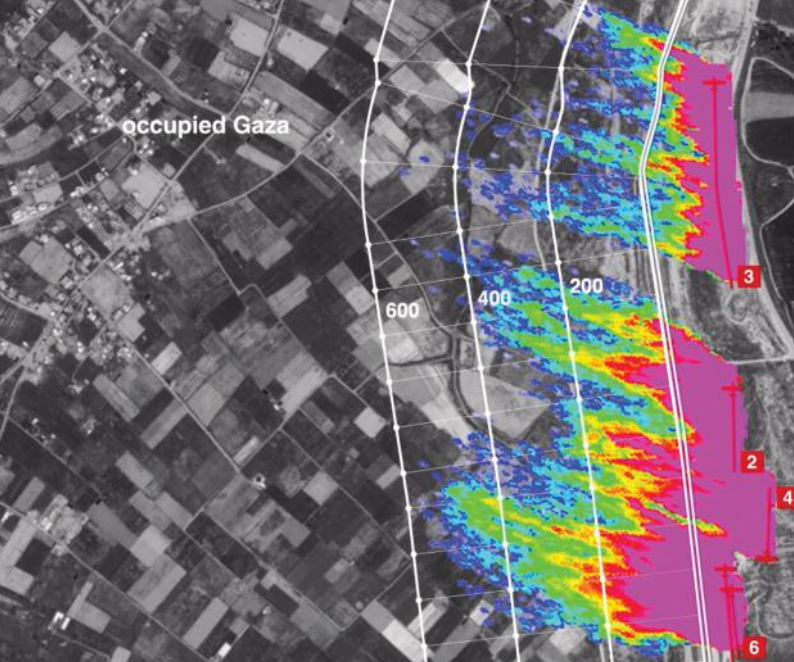
*Artist Mark Farid will be giving an informal talk about his projects Data Shadow (2015) and Poisonous Antidote (2016), both of which centered around data privacy and respective government laws. The talk will involve a small demonstration about data privacy that will involve all willing audience members, and will also discuss steps Mark took in the development of his practice, from his first year in university to graduating.*





**Mark Farid** je umetnik, producent in predavatelj, ki preučuje formiranje našega projiciranega jaza ter načine, kako našo konstruirano identiteto oblikujejo družbena pričakovanja. Leta 2014 je z odliko diplomiral iz likovne umetnosti na Univerzi Kingston v Londonu, od takrat naprej je sodeloval kot govornik in umetnik na skupinskih in samostojnih razstavah v Angliji, Franciji, Nemčiji, na Danskem, Finskem, v Sloveniji, v ZAE in na Japonskem. Leta 2017 je v sklopu TEDx nastopa predstavil svoja prva dva projekta, Data Shadow (2015) in Poisonous Antidote (2016) ter se udeležil programa Sundance New Frontier (2016) za projekt v trajanju Seeing I (2020). Sedemdnevno preizkusno predvajanje projekta Seeing I je bilo prikazano na festivalu digitalnih umetnosti Ars Electronica 2019. Farid je nastopil na številnih televizijskih postajah oz. v oddajah, kot so: Sky News, Fox News, BBC Radio 4, Guardian, Independent in New Statesman, o svojem delu pa je pisal tudi za časnik The Telegraph.

***Mark Farid** is an artist, producer and speaker, who examines the formation of our projected-self, and how our constructed identity is shaped by societal expectations. He graduated from Kingston University, London, with a First Class (Hons) degree in Fine Art in 2014, and has since given talks and participated in group and solo exhibitions in England, France, Germany, Denmark, Finland, Slovenia, UAE, and Japan. Farid gave a TEDx talk in 2017 about his first two projects, Data Shadow (2015), and Poisonous Antidote (2016), and took part in the Sundance New Frontier program, 2016, for an on-going project, Seeing I (2020). A 7-day pilot of Seeing I was exhibited at Ars Electronica Digital Arts Festival, 2019. Farid has appeared on Sky News, Fox News, BBC Radio 4, the Guardian, the Independent, the New Statesman, and has written about his work for the Telegraph.*



## SHOURIDEH C. MOLAVI

### Kmetijsko vojskovanje v Gazi: raziskovanje sodobnih izraelskih kolonialnih praks *Farm Warfare in Gaza: Examining Contemporary Israeli Colonial Practices*

#### PREDAVANJE / LECTURE

Predavanje analizira zgodovinsko uvedbo in trenutno vzdrževanje vzhodne 'meje' med okupiranim območjem Gaze in Izraelom po t. i. množičnem protestnem shodu vrnitve (Great March of Return), ki se je zgodil leta 2018. Ob upoštevanju več kot sedem desetletij trajajočega izraelskega naseljskega kolonializma se je – z odrekanjem dostopa Palestincem do njihovih kmetijskih zemljišč, ponavljajočimi se vojaškimi spopadi, uničenjem obdelovalnih površin in njihovem izkoriščanju za pašnike ter najnovejšo prakso škropljenja s herbicidi iz zraka – izoblikoval 'varovalni pas' vzdolž meje Gaze z Izraelom. Med množičnim protestnim shodom je počasno nasilje postopne uvedbe meje doseglo svoj vrhunec v hitrem ubijanju človeških teles. S pomočjo raznih vizualnih in terenskih metodologij bo predavanje razkrilo povezavo med takšnimi oblikami nasilja ter lociral uničenje okolja, kakor tudi uničenje telesa, v prostoru in času. Pri tem avtorica preučuje načine, na katere je mogoče dokumentirati pričevanje zemlje (vzporedno s človeškimi pričevanji) ter s tem razkrinkati historični izbris državnih zločinov in razgaliti oblike trajajočega nasilja naseljskega kolonializma.

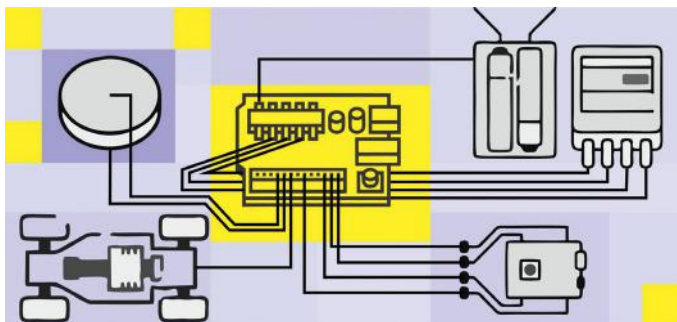


*This talk examines the historical production and ongoing maintenance of the eastern 'border' of the occupied Gaza Strip with Israel in the wake of the 2018 Great March of Return. Against the backdrop of over seven decades of Israeli settler-colonialism, a 'buffer zone' has been formed along Gaza's border with Israel through the denial of Palestinian access to agricultural lands, periodic military confrontation, the uprooting and grazing of farmlands, and the latest practice of aerial herbicidal spraying. During the Great March, the slow violence of this gradual border production culminated in the fast killing of human bodies. Using a range of visual and fieldwork methodologies, this talk will unpack the link between these forms of violence and locate the destruction of the environment and the destruction of the body in time and space. In doing so, I examine the ways in which the testimony and of the land can be documented along the human testimony to confront the historical erasure of state crimes and expose forms of ongoing settler-colonial violence.*

**Dr. Shourideh C. Molavi** je pravnica in docentka za politične znanosti na American University v Kairu v Egiptu, specialistka za teorijo kritičnih stanj, obmejne prakse, državljanstvo, begunske študije ter mednarodno pravo na področju človekovih pravic. Več kot petnajst let deluje kot terenska raziskovalka, akademska inštruktorica ter pravna raziskovalka v Izraelu in Palestini. Imenovana je bila tudi za posebno raziskovalko Izraela in Palestine v agenciji Forensic Architecture.

*Dr. Shourideh C. Molavi is a lawyer and Assistant Professor of political science at the American University in Cairo, Egypt, specializing in critical state theory, border practices, citizenship and refugee studies and international human rights law. For over fifteen years, she has worked as a fieldworker, academic instructor, and legal researcher in Israel-Palestine. Shourideh is also the dedicated Israel-Palestine Researcher for Forensic Architecture.*

[forensic-architecture.org/investigation/herbicidal-warfare-in-gaza](https://forensic-architecture.org/investigation/herbicidal-warfare-in-gaza)



## **BRIDA/TOM KERŠEVAN, SENDI MANGO, JURIJ PAVLICA**

### **Micro:bit**

#### ***DELAVNICA / WORKSHOP***

Intermedijska delavnica bo omogočala sodelujočim podrobnejše razumevanje sodobne tehnologije ter njeno upravljanje oziroma manipulacijo, ki je danes preko hitrega razvoja računalnikov in pametnih telefonov postala dostopna vsem. Večina se nas ne zaveda potencialov tehnologij, ki nas obdajajo, te nam omogočajo, da se lahko v vsakem trenutku povežemo v mreže z drugimi podobnimi napravami, ki beležijo vrednosti in podatke iz naše neposredne ali oddaljene okolice.

Namen delavnice je, ob kreativnem ustvarjanju, vzbuditi zanimanje za nove tehnologije pri vseh generacijah, njihovo spoznavanje nam omogoča, da se bolje zavedamo tako pozitivnih kot tudi negativnih učinkov, ki jih neizmerni razvoj tehnologij in njihova vse večja dostopnost povzročata. Hkrati pa nudi vpogled v nove vzorce kreativnega razumevanja, ustvarjanja in manipuliranja z orodji, ne glede za kaj so ta orodja namenjena ali izdelana. Nauči nas tudi, da je potrebno tehnologijo, če želimo biti kreativni, tudi upravljati in nadzorovati in se ne le odzivati ali nemo opazovati. Delavnica bo obsegala uvodni del, s spoznavanjem mikrokontrolerja, ter predstavitev računalniških in mobilnih aplikacij za programiranje in komuniciranje z mikrokontrolerjem. Kreativni del delavnice bo temeljil na konkretni uporabi naprav, ki bodo preko programske aplikacije oziroma vmesnika omogočale realno časovno odzivnost s svetlobo in zvoki, ki jih bodo izdelali sodelujoči.

*The intermedia workshop will provide participants with an in-depth understanding of contemporary technology, as well as ways of managing/manipulating technology, which has by now become accessible to everyone due to the fast-paced development of computers and smart phones. Most of us are unaware of the potential offered by technologies that surround us; they allow us to connect, at any given moment, into networks with other similar devices, which record values and data from our immediate or distant environment.*

*The purpose of the workshop is to use creativity to spark an interest in new technologies in all generations, because getting to know technology allows us to become more aware of both the positive and the negative impacts caused by its overwhelming progress and increasing accessibility. At the same time, the workshop provides an insight into new patterns of creative understanding, production, and manipulation of various tools, regardless of the fact what these tools are intended or designed to do. Participants will learn that in order to be creative, technology requires management and control as well, rather than just our responding to it or being a silent observer. The workshop will consist of an introductory part explaining the basics of microcontrollers, and a presentation of computer and mobile applications for programming and communicating with a microcontroller. The creative part of the workshop will include a concrete use of devices with a software app (interface), to enable real-time light- and sound responses produced by the participants.*

**Skupina BridA/Tom Kerševan, Sendi Mango, Jurij Pavlica**, ki jo sestavljajo diplomanti beneške Akademije lepih umetnosti, se je formirala med študijem leta 1996. Skupina, ki ustvarja lastno produkcijo na širokem polju sodobnih umetniških praks, razstavlja doma in v tujini, poleg tega pa sodeluje tudi v številnih mednarodnih rezidenčnih programih v tujini, na delavnicah in seminarjih. Dela skupine BridA so bila odkupljena za več mednarodnih zbirk sodobne umetnosti. Leta 2015 je za 20 letno uspešno delovanje na področju umetnosti prejela najvišje priznanje Mestne občine Nova Gorica, nagrado Franceta Bevka, leta 2018 pa medna-rodno nagrado tesla. Med drugim so prejemniki štipendij Iaspis, ki jo podeljuje Ministrstvo za kulturo Švedske, in Culture Bridges, ki jo pod okriljem EU podeljuje British Council.

**BridA/Tom Kerševan, Sendi Mango, Jurij Pavlica** is a collective made up of graduates from the Venice Academy of Fine Arts, formed in 1996 during their university years. The group that produces artwork across a wide spectrum of contemporary artistic practices exhibits both locally and internationally, and has participated in numerous international residency programs, workshops and seminars. BridA's works have been purchased for a score of international contemporary art collections. In 2015 they received the highest award of the Municipality of Nova Gorica, the France Bevka Prize, commemorating 20 years of their successful activity; in 2018 they received the international Tesla Award. They are recipients of the Iaspis scholarship awarded by the Swedish Ministry of Culture, and Culture Bridges, awarded by the British Council under the EU.

[www.brida-kud.si](http://www.brida-kud.si)

## OR POIESIS

### Urok tišine / *Spell of Silence*

### Kamnolom KISETSU / *KISETSU Quarry*

#### ZVOČNI PERFORMANS / *LIVE SOUND PERFORMANCE*

OR poiesis se v zvočnem performansu Urok tišine (2019) zavije v prividnost kamnitega molka in iz anemičnosti privzdigne praznino. Kamen, z dotikom, z dihom prebudi za oglušelo telo.

Urok tišine je performativno delo projekta Kamnolom KISETSU, ki ga je umetnica razvila kot 8 kanalno zvočno kompozicijo za prostor Steklenik (september–november 2019) in kamniti instrument. V performansu Urok tišine bo umetnica vključila kamniti instrument.

Za Kamnolom KISETSU je umetnica zapisala: "Človek živi v prepričanju, da mu napredna tehnologija omogoča življenje brez smisla in mimo sinhronosti s kozmosom, a telesa nam kažejo, da temu ni tako. Senzualna, snovno čutna vez s svetom nas prestavi na globok rob zaznave. Že vrsto let opravljam akustično poetično študijo zapuščenega kamnoloma. V jedru zvočne kompozicije je kamen, tišina, poetika prostora in zvočnost določenega kraja v razširjenem, cikličnem času, raztezajoč se čez več let. Odmev kamnitega vrta je neobremenjen s hitrostjo sprememb, ki bi jih vsiljevala potreba po monetarizaciji. Prav kamen človeka tesno pripenja na prastare, izvirne, kozmične prvine planeta. Moj namen je ojačati vibracijske kvalitete kamenja, jih dvigniti v slišno območje človeka in integrirati kot interaktivno zvočno-frekvenčno polje, ki zveni s človekom, njegovim telesom in zavestjo. Zanima me obnašanje različnih snovnih ter bio-morfni polj ter njihova interferenca."

*In her live sound performance Spell of Silence (2019), OR poiesis wraps herself into the virtuality of stone silence, elevating emptiness out of anemia. Through touch, through breath, she wakes up the stone for the deafened body.*

*Spell of Silence is a performative art work of the project KISETSU Quarry, which the artist developed as an 8-channel sound installation for Steklenik Gallery (September–November 2019) and a stone instrument. She will include the stone instrument in her performance Spell of Silence.*

*For KISETSU Quarry, the artist wrote: "A person might live with the belief that advanced technology induces life without meaning and out of sync with the cosmos, but our bodies demonstrate that this is certainly not the case. The sensual, material and discernible link with the world shifts us to the deep border of cognition. For several years, I have been engaged in an acoustic and poetic study of an abandoned quarry. At the core of the sound composition, we find stone, silence, the poetics of space and the acoustics of a certain place in an expanded, cyclical time, spanning several years. The echo of the stone garden is unburdened with the pace of change that could be forced by the need for monetization. Precisely stone connects the human with the ancient, authentic, cosmic elements of the world. The intent is to amplify the vibrational qualities of the stone, transfer them into the human hearing range and integrate them as an interactive sound-frequency field that resonates with a listener's body and consciousness. I am interested in the behavior of different material and biomorphic fields as well as their interference."*

Prevod / Translation: Urban Belina, Zavod Cona



*OR poiesis, Urok tišine. Avtorja fotografije kolaža: Dino Schreilechner in Petra Kaps*

**OR poiesis** je umetnica in raziskovalka na področju zvoka in slušne percepcije ter poetičnega performansa. Besedo razširja v sonornih sferah časprostor poezije. Ob vseh digitalnih razsežnostih ji je središčna fizična prisotnost telesa. V širšem opusu svoje umetniške prakse avtorica raziskuje modalitete tišin in potencialnosti, ki jih tiha okolja nudijo za prisluh pretanjenim akustičnim kvaliteta snovi in glasu. V zadnjih letih je pomembno prispevala k razvoju interaktivnih, zvočnih in performativnih umetniških praks. Njena zvočna dela beležijo samote.

***OR poiesis** is an artist and researcher in the field of sound, sound perception and poetic performance. She expands the word into the sonorous spheres of time-space poetry. Besides all of the digital dimensions, her central interest is the physical presence of the body. In the broad oeuvre of her artistic practice, OR poiesis explores the modalities of silences and the potentialities that are offered by silent, frequently exploited environments to listen to subtle acoustic qualities of substances and the voice. In the past years, she has significantly contributed to the development of interactive, sound and performative art practices. Her sound works document solitudes.*

Produkcija projekta Urok tišine: Petra Kaps s finančno podporo Mestne občine Maribor / Production of the project Spell of Silence: Petra Kaps with financial support by Municipality of Maribor

Koprodukcija / Co-production: KID KIBLA

Produkcija projekta Kamnolom KISETSU: CONA | zavod za procesiranje sodobne umetnosti, za prostor: Steklenik, galerija za zvok, bioakustiko in znanost / Production of the KISETSU Quarry project: CONA | institute for contemporary arts processing; for venue: Steklenik, gallery for sound, bioacoustics and art

[www.steklenik.si/or-poiesis-kamnolom-kisetsu/](http://www.steklenik.si/or-poiesis-kamnolom-kisetsu/)

SEZONA  
2019/20

# Maribor Hardware Meetup

RADIOKLUB  
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Start:up  
Maribor

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mobile embedded solutions

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## Maribor Hardware Meetup

### PREDAVANJA / LECTURES

Na srečanju Maribor Hardware Meetup se bodo zvrstila tri predavanja, kjer bomo spoznali zanimivo uporabo elektronike v industrijskem okolju, nove tehnologije in njihovo uporabo. Na ta način omogočajo praktični vpogled v uporabo teh tehnologij doma in v radioamaterskem svetu. Vsebinsko se bodo navezala na elektroniko, tiskana vezja, telekomunikacije, IoT (Lora, NB-IoT), firmware, 3D tiskanje in lasersko rezanje, embedded rešitve (Raspberry Pi, BeagleBone), mikrokontrolerji in druge rešitve.

Dogodek organizira Radioklub "ŠTUDENT" Maribor S59DXX ([s59dxx.uni-mb.si](http://s59dxx.uni-mb.si)), kjer mladi in mladi po srcu raziskujejo in ustvarjajo na področju telekomunikacij in elektronike, včasih skupaj splezajo na bližnji hrib, kjer postavijo kako anteno ali dve, raziskujejo in ustvarjajo.

Maribor Hardware Meetup sponzorira Inštitut IRNAS ([www.irmas.eu](http://www.irmas.eu)). IRNAS je hardverski laboratorij, specializiran za hiter razvoj, prototipiranje ter izdelavo stroškovno učinkovitih IoT rešitev in strojne opreme.

*Maribor Hardware Meetup will feature three lectures which will acquaint us with the interesting use of electronics in the industrial environment, new technologies and their application. By introducing these aspects, the lectures will provide a practical look into the ways of using these technologies at home and in the amateur radio world. The content of the meetups is related to electronics, printed circuit boards, telecommunications, IoT (Lora, NB-IoT etc.), firmware, 3D printing and laser cutting, embedded solutions (Raspberry Pi, BeagleBone), microcontrollers and other solutions.*

*The event is organized by Radioklub "ŠTUDENT" Maribor S59DXX ([s59dxx.uni-mb.si](http://s59dxx.uni-mb.si)), where the youth and those young by heart research and create in the field of telecommunication and electronics. Occasionally, they even climb up a nearby hill, put up an antenna or two, explore and create.*

*Maribor Hardware Meetup is sponsored by Institute IRNAS ([www.irmas.eu](http://www.irmas.eu)). They are a hardware laboratory, specialized in fast development, prototyping and production of cost effective IoT solutions and hardware.*



## URNIK KIBLIX 2019

### Sreda, 4. 12. 2019

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- 18:00 Maribor Hardware Meetup  
20:00 Predstavitev Khora Contemporary (Allegra Shorto, umetniška vodja)  
20:30 Odprtje razstave Navidezna umetnost / Khora Contemporary: Christian Lemmerz, Paul McCarthy, Yu Hong in Delavski dom Trbovlje: Tomo Križnar

### Četrtek, 5.12.2019

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- 14:00 Delavnica prenosa veščin: Michael Takeo Magruder  
18:00 Predavanje / Michael Takeo Magruder (US/UK): VR umetnost v post-digitalni dobi: estetska in kritična raziskovanja virtualnih tehnologij in kontekstov v sodobni umetnosti  
18:45 Predavanje / Mark Farid (UK): Seeing I  
19:30 Pogovor z umetnikoma

### Petek, 6.12.2019

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- 10:00 – 12:00 Delavnica "Microbit", BridA/Tom Kerševan, Sendi Mango, Jurij Pavlica (SI)  
18:00 Predavanje / Dr. Shourideh C. Molavi (Forensic Architecture): Kmetijsko vojskovanje v Gazi. Raziskovanje sodobnih izraelskih kolonialnih praks  
20:00 Zvočni performans / OR Poiesis: Urok tišine. Kamnolom KISETSU

## TIMETABLE KIBLIX 2019

### Wednesday, 4 December 2019

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- 6 p. m. Maribor Hardware Meetup  
8 p. m. Presentation of Khora Contemporary by Allegra Shorto, Art Director  
8.30 p. m. Opening of the Virtual art exhibition / Khora Contemporary: Christian Lemmerz, Paul McCarthy and Yu Hong and Delavski dom Trbovlje: Tomo Križnar

### Thursday, 5 December 2019

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- 2 p. m. Skill Sharing Workshop with Michael Takeo Magruder  
6 p. m. Lecture / Michael Takeo Magruder: VR Art in the Post-Digital Age: aesthetic and critical explorations of virtual technologies and contexts in contemporary art practice  
6.45 p. m. Lecture / Mark Farid: Seeing I  
7.30 p. m. Discussion

### Friday, 6 December

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- 6 p. m. Lecture / Dr. Shourideh C. Molavi (Forensic Architecture): Farm Warfare in Gaza: Examining Contemporary Israeli Colonial Practices  
8 p. m. Sound Performance / OR poiesis: Spell of Silence. KISETSU Quarry



## MREŽA CENTROV RAZISKOVALNIH UMETNOSTI IN KULTURE

Osnovno poslanstvo RUK je z raziskovalno umetnostjo povezovati meje med naravoslovnimi in družboslovnimi vedami na področjih, kot so informacijsko-komunikacijske tehnologije, humanizacija tehnologije, virtualna in razširjena resničnost, robotika, biotehnologija in nanotehnologija – nelinearnost in procesualnost pa odpirata nove možnosti produkcijskih praks tudi v gospodarstvu.

Cilj projekta je integracija umetnosti in kulture v znanstvene in tehnološke raziskave, razvoj in inovacije, digitalizacijo, podjetništvo, usposabljanje in izobraževanje s poudarkom na humanistiki in družboslovju, ekologiji, krožnem gospodarstvu in trajnostnem razvoju.

Povezovanje domačih deležnikov in njihovih kapacitet, spodbujanje razvoja prebojnih in integriranih novih produktov in storitev bodo omogočali pripravo in izvedbo zahtevnejših razvojnih projektov.

Glavnino RUK sestavljajo partnerji iz vzhodne kohezijske regije skupaj s partnerji iz zahodne Slovenije: Delavski dom Trbovlje, Kulturno izobraževalno društvo KIBLA, Maribor in Kulturno izobraževalno društvo PINA, Koper.

## NETWORK OF ART RESEARCH AND CULTURE CENTERS

*The primary mission of RUK is to connect the boundaries between natural and social sciences with art research in the fields such as information and communication technologies, humanizing technology, virtual and augmented reality, robotics, biotechnology and nanotechnology – while the nonlinearity and processuality also open new possibilities of production practices in the economy.*

*Project's goal is to integrate art and culture into scientific research, development and innovation, digitalisation, entrepreneurship, training and education, with emphasis on humanities and social sciences, ecology, circular economy and sustainable development.*

*Connecting domestic stakeholders and their capacities, promoting advancements of breakthroughs and integrated new products and services, will enable preparation and implementation of complex development projects.*

*The majority of RUK is made up of partners from the Eastern Cohesion Region, together with partners from western Slovenia: Institute for Culture Delavski dom Trbovlje, Association for Culture and Education KIBLA, Maribor and Association for Culture and Education PINA, Koper.*



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EVROPSKA UNIJA  
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REGIONALNI RAZVOJ



REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA KULTURO

## KIBLIX 2019

Festival umetnosti in tehnologije / *Festival of Arts and Technology*  
4.-6. 12. 2019

MMC KIBLA, Ulica kneza Koclja 9, Maribor

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Aleksandra Kostič in Peter Tomaž Dobrila

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**KIBLA**

Zanj / *Represented by*

Aleksandra Kostič, predsednica KID KIBLA / *President of ACE KIBLA*

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