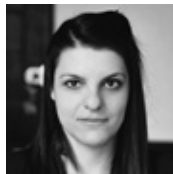


Između umjetnosti i znanosti

Between Art and Science

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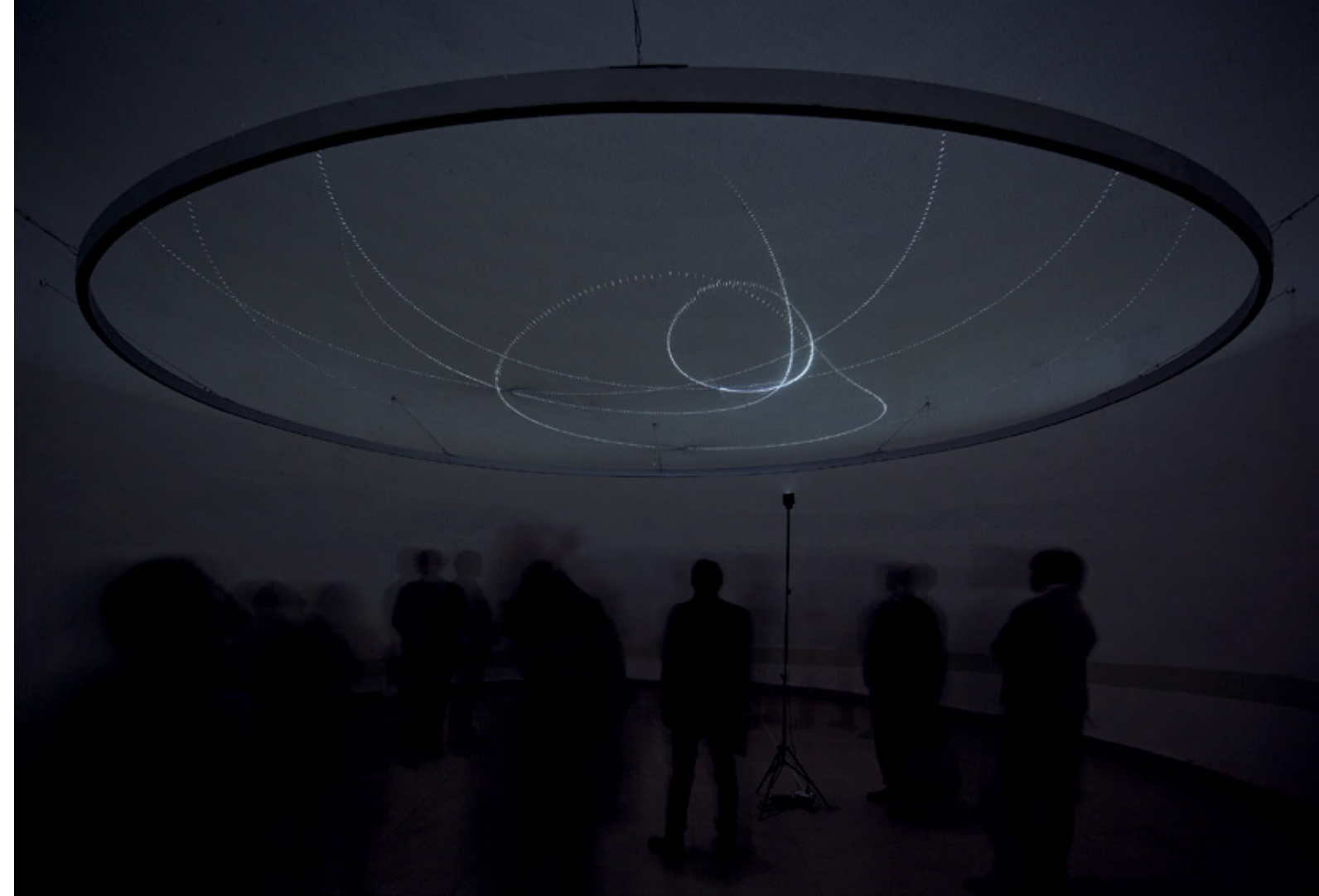


Josipa Bubaš

fotografije
photographs by Arhiva Galerija Klovićevi dvori, Zagreb /
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¶ Izložba *Strukture nevidljivog*, otvorena u Klovićevim dvorima 16. travnja, dio je većeg interdisciplinarnog projekta koji uključuje suradnju umjetnika i znanstvenika, a potencijal ovakve suradnje dodatno je pojačan samom temom projekta i ulaskom u područje nedostupno svakodnevnoj percepciji. Poticaj koji umjetnici vide u znanstvenim paradigmatama, kao načinu komunikacije sa stvarnošću, nije nov. U novijoj hrvatskoj povijesti umjetnosti možda se najočiglednije manifestirao u pokretu Nove tendencije (1961. – 1973.), koji je formiran u Zagrebu, a okupljao je brojne znanstvenike i umjetnike koji su se, između ostalog, bavili istraživanjem percepcije. U tom smislu, izložba *Strukture nevidljivog* svojevrsan je nastavljatelj takve tradicije, a prikazuje osam radova nastalih kroz dijalog umjetnika i znanstvenika, pri čemu se naglašava ravnopravnost pozicija ovih sličnih, no i istovremeno vrlo različitih uvida. Umjetnici su na različite načine koristili znanstvene postavke, pri čemu je znanstvena spoznaja kao validna slika svijeta poslužila umjetnosti kao polazište za istraživanje nevidljivih struktura stvarnosti. Pretpostavka je da

¶ *The structures of the invisible* exhibition, opened on 16 April 2014 at the Klovićevi dvori Gallery, is part of a larger interdisciplinary project which includes the collaboration of artists and scientists. The potential of such collaboration is emphasized by the topic of the project, and access into an area which is outside our everyday perception. The encouragement that the artists see in scientific paradigms as a way of communication with reality is not new – in recent Croatian art history it was, perhaps, manifested most evidently in the New Tendencies movement (1961–1973) which was formed in Zagreb, and which gathered many artists and scientists who, among other things, also explored perception. *The structures of the invisible* exhibition thus continues the tradition, showing eight works which were created in the dialogue between artists and scientists, while emphasizing the equality of the position of these similar, and yet very different, perspectives. Artists used scientific facts in different ways. Scientific cognition, as a valid image of the world, served as a starting point

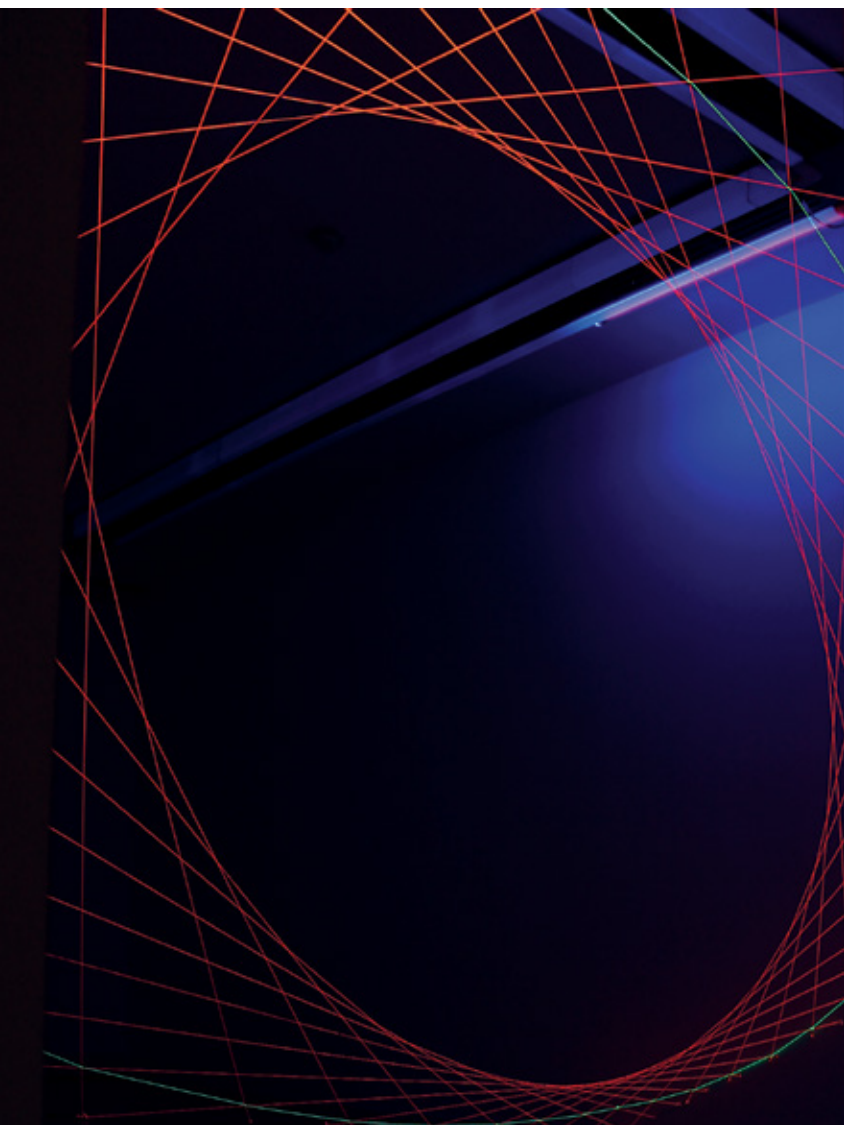


znanost pri tome razjašnjava ono što je tek povremeno nagoviješteno. No pri tome ne treba zaboraviti riječi Wernera Heisenberga, jednog od pionira kvantne fizike, koji u knjizi *Fizika i Filozofija* piše: *Prirodna znanost ne objašnjava prirodu kakva ona jest po sebi, nego je ona dio međudjelovanja između prirode i nas samih. Ona opisuje prirodu koja je izložena našim pitanjima i mogućnostima.* Upravo u potencijalu postavljenog pitanja nalazi se mogućnost restrukturiranja odgovora koji kreira stvarnost. Umjetnost je čin propitivanja, u idealnom slučaju ona je i mogućnost oslobođanja od jednoznačnog odgovora. Međutim, pri komunikaciji umjetnosti i znanosti postaje vidljiva jasna hijerarhizacija zapadnjačkog svjetonazora – racionalno i empirijsko nasuprot fleksibilnom i intuitivnom, pa čak i ukoliko sama znanost pobija vlastite temelje zasnovane na postojanju subjekta odvojenog i neovisnog od okoline i svijeta. Čini se da je u dijalogu umjetnosti i znanosti, znanost ta koja osigurava pretpostavke, a umjetnost ih potom razrađuje na manje ili više neobavezan način. Međutim, zanimljivo bi bilo primijeniti umjetničke

to art in the exploration of invisible structures of reality. The assumption is that science clarifies that which is sporadically insinuated. We must not forget the words of Werner Heisenberg, one of the pioneers of quantum physics, who in the book titled *Physics and Philosophy* says: *Natural science does not simply describe and explain nature; it is part of the interplay between nature and ourselves. What we observe is not nature itself, but nature exposed to our method of questioning.* The potential of the question posed lies precisely in the possibility to restructure the answer which creates reality. Art is the act of questioning; ideally it is the possibility of liberation from an unambiguous answer. In the communication between art and science, however, the hierarchy of the western worldview becomes apparent – it is rational and empirical, as opposed to the flexible and intuitive, even if the science itself refutes its foundations which rest on the existence of the subject, which is separate and independent from the surroundings and the world. In the dialogue between art and science it seems that

▲ Ivana Franke, *In the Faraway Past and In the Future*, 2014., aluminijska konstrukcija, najlonski konac, stativ, LED svjetla, transformatori, promjer 6 m

▲ Ivana Franke, *In the Faraway Past and In the Future*, 2014, aluminum construction, nylon thread, tripod, LED lights, transformers, 6-m diameter



▲ Pierre Gallais, *Architexture (Phil... en... tropie)*, 2014., matematički crtež, fluorescentna vuna

▲ Pierre Gallais, *Architexture (Phil... en... tropie)*, 2014., mathematic drawing, fluorescent wool

strategije na znanstvene procese i pokušati pronaći mehanizme koji nisu zasnovani na čistoj racionalnosti, čije je postojanje više paradigma negoli realitet, ukoliko uopće možemo još uvijek razgovarati u takvim kategorijama. U katalogu izložbe *Strukture nevidljivog* nekoliko se puta pojavljuje diskrepancija u terminologiji umjetnika i znanstvenika, kao i potpuno različiti pristupi istoj problematici. Upravo je ovaj prostor potencijalno najzanimljiviji, budući da otvara mogućnost evaluacije postojeće terminologije, a time i performativnih činova. Heisenberg piše: *Stvarni problem iza mnogih spornih pitanja bila je činjenica da nije postojao nikakav jezik u kojem se doslovno moglo govoriti o novoj situaciji. Obični jezik počivao je na starim pojmovima prostora i vremena i sam taj jezik stvorio je sredstvo za nedvosmisleno*

science provides assumptions, and then art elaborates them in, a more or less, casual manner. However, it would be interesting to apply artistic strategies to scientific processes, and try to find mechanisms which are not based on pure rationality, whose existence is more a paradigm than a reality, if those categories can still be used. In the exhibition catalogue there are several discrepancies in terminology used by artists and scientists, as well as conflicting approaches to the same problem. This area is potentially the most interesting since it allows the possibility of the evaluation of the existing terminology and performative acts. Heisenberg says: *The real problem behind these numerous controversies was the fact that no language existed in which one could speak consistently about the new situation. Ordinary language was based upon old concepts of space and time, and this language offered the only unambiguous means of communication about the setting up, and the results of the measurements.* Here we can draw a parallel between the elusiveness of scientific discoveries in language, and the relation of art and normative reality, or finding new modalities of being, and new ways of perception/creation of reality inherent to artistic activity. Reality is constructed in language, but language cannot describe reality. Can art? While science is based on the assumption, art is based on the possibility. In that context the collaboration between an artist and a scientist is potentially fruitful, provided that they are equal. If science becomes a teacher of art, and if a hierarchical relation is established, there can be no dialogue, and art becomes

▼ Tommi Grönlund & Petteri Nisunen, *Plane*, 2013., žice napete sa stropa i poda, u okomici ih drži sila magneta pričvršćenih na čelične valjke

▼ Tommi Grönlund & Petteri Nisunen, *Plane*, 2013, wires stretched between the ceiling and the floor and kept in a vertical position by stainless steel weights



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sporazumijevanje o rasporedu i rezultatima mjerenja. Ovdje je moguće povući paralelu između izmicanja znanstvenih otkrića iz jezika i odnosa umjetnosti prema normativnoj stvarnosti, odnosno s pronalaženjem novih modaliteta bivanja i novih načina percepcije/kreiranja stvarnosti koji su inherentni umjetničkom djelovanju. Stvarnost je izgrađena u jeziku, ali jezik ne može opisati stvarnost. Može li to učiniti umjetnost? Dok se znanost zasniva na pretpostavci, umjetnost se zasniva na mogućnosti. U tom kontekstu suradnja umjetnika i znanstvenika potencijalno je plodonosna, pod pretpostavkom da postoji ravnopravnost. Ukoliko znanost postaje učiteljica umjetnosti i stvori se hijerarhijski odnos, nestaje dijalog i umjetnost postaje tek umjetnički prijevod znanstvenih pretpostavki. Izložba *Strukture nevidljivog*

merely an artistic translation of scientific assumptions. The exhibition *The structures of the invisible* occasionally reflects such a relation, which is merely a reflection of time in which science is practically a new dogma. Yet, the exhibition works partly manage to open a new area, creating a dialogue where the performative quality of the work of art manages to be more than just an illustration of science. Making visible the invisible thus in no way implies that invisible is translated into a familiar language, but that the perception of the visitors is opened to new levels of activities. In that segment works still employ a familiar vocabulary, and take on a format of spatial installation which the visitors enter, or are drawn into. The significance of the perceptive apparatus of the observer is

▲ Marine Antony, *Black over blue*, 2011., viseća instalacija, 110 aluminijskih pločica

▲ Marine Antony, *Black over blue*, 2011, hanging installation, 110 aluminum plates

STRUKTURE NEVIDLJIVOG, Izložba

THE STRUCTURES OF THE INVISIBLE, Exhibition

Umjetnost je čin propitivanja, u idealnom slučaju ona je i mogućnost oslobađanja od jednoznačnog odgovora

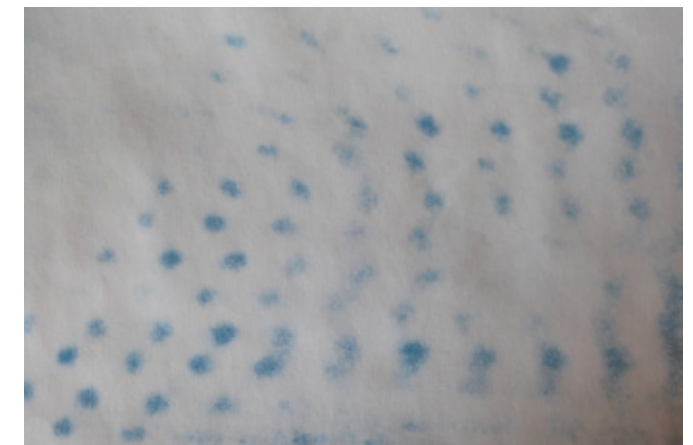
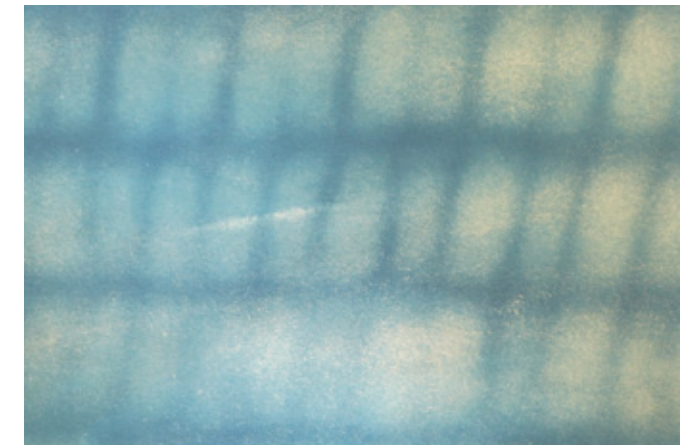
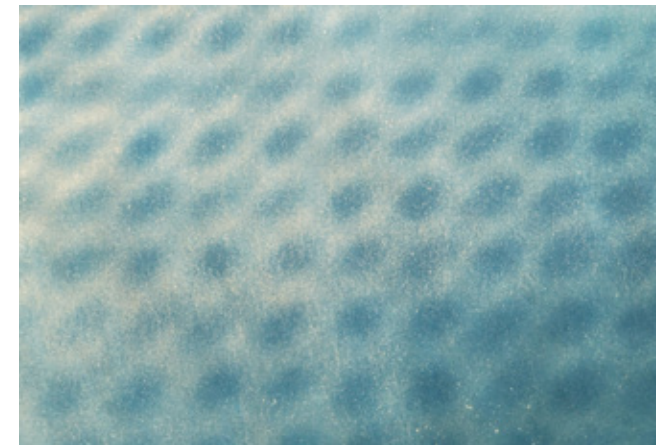
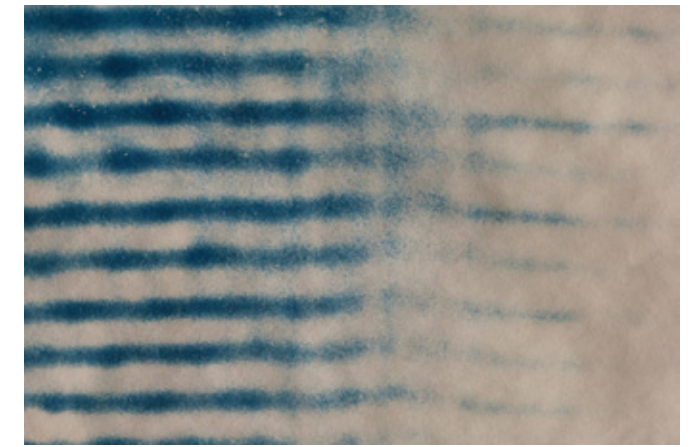
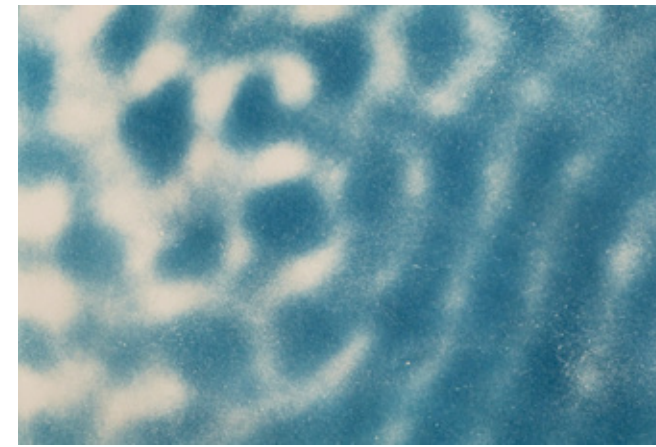
Art is the act of questioning; ideally it is the possibility of liberation from an unambiguous answer

mjestimično odražava takav odnos, koji je tek refleksija vremena u kojemu je znanost gotovo postala nova dogma. Izloženi radovi ipak djelomično uspijevaju otvoriti novi prostor, kreirajući dijalog u kojemu performativnost umjetničkog čina uspijeva iskočiti iz ilustracije znanosti. Učiniti vidljivo nevidljivim pri tome nikako ne znači pokušati prevesti nevidljivo u poznati jezik, nego pokušati otvoriti percepciju posjetitelja za nove razine zbivanja. No u tom segmentu radovi se ipak koriste poznatim vokabularom, preuzimajući format prostorne instalacije u koju posjetitelji ulaze i bivaju uvučeni. Značenje perceptivnog aparata gledatelja time se osvještava, pri čemu je uglavnom naglasak na vizualnom ili prostornom iskustvu. Primjerice, takav je princip vidljiv u radovima Pierrea Gallaisa, čiji se radovi temelje na apstraktnim matematičkim principima i u prostoru funkcioniraju poput svjetlosnih matematičkih eksperimenata. Slično funkcionira i rad *Black over Blue* Marine Antony, koja u zamračeni prostor na svim visinama postavlja pločice koje su s jedne strane crne, a s druge fluorescentne, čime je stvoreno svojevrsno vizualno vibracijsko polje, dok Mirjana Vodopija u mračnu prostoriju postavlja projekcijsko platno koje se sužava u usku liniju te stvara dojam akceleracije simuliranih čestica. Rad Isabelle Sordage, *Kutija za crtanje*, uspostavlja prostor u kojemu posjetitelji bivaju uronjeni u zvučni podražaj, koji se doživljava gotovo na taktilnoj razini. Ulaskom u prostor u kojemu se na zidu nalaze tri konkavne plohe koje odbijaju zvučne valove, posjetitelji hodajući osjećaju izmjene intenziteta zvučnih vibracija, dok crveni zid stvara baršunast dojam, čime se uspostavlja odnos optičkih i auditivnih podražaja koji kreiraju specifičnu atmosferu. ◆ Princip kombiniranja različitih modaliteta percepcije (mahom auditivne i vizualne), vidljiv i u radu *Bijeli šum* Marine Antony, čini se kao dobar izbor za bavljenje nevidljivim strukturama. Kako nagovijestiti postojanje nevidljivog osvještavajući mehanizme percepcije? ◆ Umjetnost

Elias Crespin, *Plano Flexionante Circular 5*, 2014., viseća instalacija, 32 tanka metalna štapića

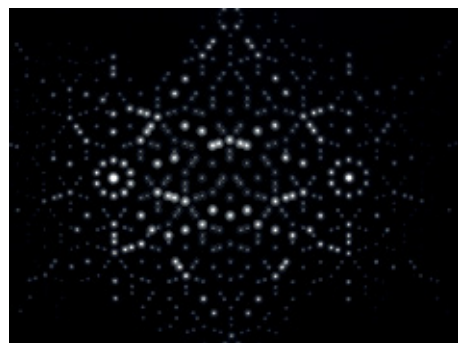
Elias Crespin, *Plano Flexionante Circular 5*, 2014., hanging installation, 32 thin metal rods

made apparent, mostly by emphasizing the visual, or the spatial experience. Such an approach can be seen in the works of Pierre Gallais, whose works are based on abstract mathematical principles, and function as mathematical experiments with light. Similar is the work *Black over Blue* by Marine Antony, who puts plates which are black on one side and fluorescent on the other, on all levels of an obscure space, which results in a kind of a visual vibration field. Mirjana Vodopija places a projection screen in a dark room; it is narrowing into a thin line, and makes an impression of simulated particles acceleration. *Drawing Box* by Isabelle Sordage creates an area where the observer dives into the sound simulation which is experienced almost on a tactile level. Entering the space with three concave surfaces, which reject the sound waves against the wall, the visitor feels the changes in the intensity of sound vibrations as he walks. The red wall creates a velvety impression which establishes the relation of optic and auditory stimuli thus creating a specific atmosphere. ◆ The principle of mixing different modalities of perception (mostly auditory and visual), which can be seen in *White noise* by Marine Antony, seems to be a good choice for dealing with invisible structures. How to insinuate the existence of the invisible by raising awareness of the mechanisms of perception? Art and science are cognitive tools which participate in the creation of reality, and therefore they have a large responsibility. The problem of the rationalist system is the tendency to separate and categorize, which impairs communication among different activities. The problem of language is also an aggravating circumstance, as



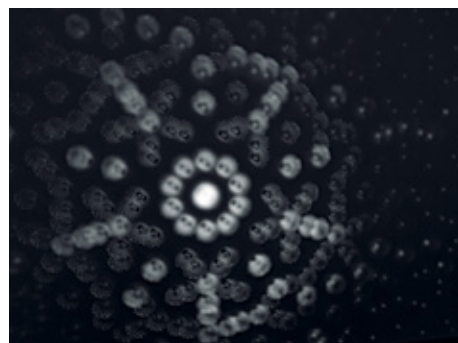
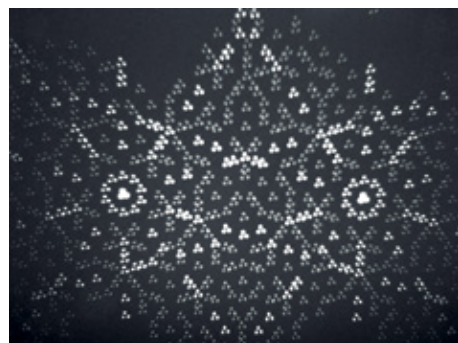
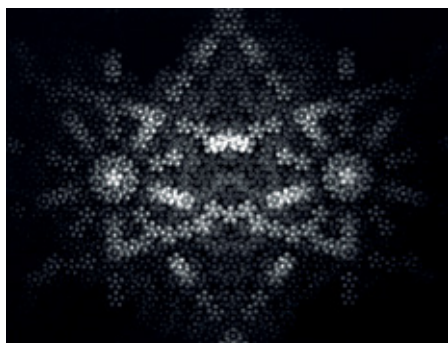
▲ Isabelle Sordage, *Expérience 1*, 2014., tragovi zvučnih frekvencija na papiru (otisak)

▲ Isabelle Sordage, *Expérience 1*, 2014., traces of sound frequencies on paper (print)



◀ Martina Kramer,
Penroseove zvijezde 2,
2014., drveni objekt,
pleksiglas, perforacija
laserom na aluminijskoj
ploči, 100 x 80 x 100 cm

◀ Martina Kramer,
Penroseove zvijezde 2,
2014, wooden object,
plexiglas, laser perforation
on the aluminum board,
100 x 80 x 100 cm



Mirjana Vodopija ▶
Vortex, 2014., metalna
konstrukcija, platno,
uže, projekcija
300 x 300 x 500 cm

Mirjana Vodopija ▶
Vortex, 2014, metal
construction, canvas,
rope, projection
300 x 300 x 500 cm

i znanost spoznajni su alati koji sudjeluju u kreaciji stvarnosti te je stoga njihova odgovornost velika. Problem racionalističkog sustava je tendencija odvajanja, kategorizacije koja otežava komunikaciju između raznorodnih aktivnosti. Problem jezika također se javlja kao otežavajuća okolnost, baš kao i pitanje metodologije. Idealno, ni umjetnost niti znanost ne bi trebale sjediti na odvojenim pijedestalima tek povremeno se upuštajući u komunikaciju. Skriveno strukture stvarnosti, ako uzmemo u obzir Heisenbergove riječi, u tom slučaju postat će samo još jedna refleksija poznatog, a potencijal drugačijeg bit će izgubljen. Umjetnost postavljanja pitanja početak je poljuljavanja pretpostavljene stabilnosti odgovora, a upravo bi u toj domeni umjetnost trebala profitirati od svoje deklarativne slobode i usuditi se učiniti iskorak.

is the question of methodology. In an ideal situation neither art nor science should be on their separate pedestals, communicating only occasionally. The hidden structures of reality, if we take Heisenberg's words into account, will then be just another reflection of the known, and the potential of the different will be lost. The art of asking questions is the beginning of destabilization of the accepted stability of the answers, and that is the domain where art should profit from its declarative freedom, and dare to make a breakthrough.

