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# The E.A.T. Datascape: An Experiment in Digital Social History of Art

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► **To cite this version:**

Christophe Leclercq, Paul Girard, Daniele Guido. The E.A.T. Datascape: An Experiment in Digital Social History of Art. *Život umjetnosti*, 2020, 105-2019, pp.110 - 137. 10.31664/zu.2019.105.05 . hal-03237130

**HAL Id: hal-03237130**

**<https://sciencespo.hal.science/hal-03237130>**

Submitted on 26 May 2021

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**E.A.T. datascape:  
eksperiment u digitalnoj  
socijalnoj povijesti umjetnosti**



**The E.A.T. Datascape:  
An Experiment in  
Digital Social History of Art**

IZVORNI ZNANSTVENI RAD  
Predan: 29.6.2019.  
Prihvaćen: 13.11.2019.  
DOI: 10.31664/zu.2019.105.05  
UDK: UDK: 7.01+316.74:7]:004

#### SAŽETAK

Experiments in Art and Technology (E.A.T.) organizacija je koju su 1966. zajedno osnovali umjetnici Robert Rauschenberg i Robert Whitman te inženjeri Billy Klüver i Fred Waldhauer, kako bi podržali suradnju između umjetnika i inženjera. E.A.T. datascape digitalni je instrument za analizu digitaliziranih tragova koje su ostavili članovi organizacije putem brojnih dostupnih resursa. Njegov je cilj što je moguće detaljnije analizirati složenost kolaborativnih interdisciplinarnih radova. Zahvaljujući antropološkom pristupu usmjerenom na djelovanje, metodologija E.A.T. datascapea omogućuje nadilaženje razlike između povijesti umjetnosti i sociologije umjetnosti te obnavljanje socijalne povijesti umjetnosti dovođenjem u pitanje pojma autorstva i opisivanjem djela kao sačinjenoga presijecanjem heterogenih trajektorija, a ne kao objekta u kontekstu koji bi na njega utjecao ili tvorio njegovo okruženje. Drugim riječima, ona nam omogućuje razmišljanje o tome što digitalni dizajn čini zauzvrat za socijalnu povijest umjetnosti i iznošenje hipoteza o tome što bi digitalna socijalna povijest umjetnosti mogla biti ili što bi mogla ponuditi istraživanju složenih interdisciplinarnih projekata, kojih je sve više u svijetu suvremene umjetnosti.

#### KLJUČNE RIJEČI

Experiments in Art and Technology, E.A.T., suradnja, digitalna povijest umjetnosti, digitalna socijalna povijest umjetnosti, digitalne metode, digitalni dizajn

ORIGINAL SCIENTIFIC PAPER  
Received: June 29, 2019  
Accepted: November 13, 2019  
DOI: 10.31664/zu.2019.105.05  
UDC: UDK: 7.01+316.74:7]:004

#### ABSTRACT

Experiments in Art and Technology (E.A.T.) is an organization co-founded in 1966 by artists Robert Rauschenberg and Robert Whitman, and engineers Billy Klüver and Fred Waldhauer, in order to support collaboration between artists and engineers. The E.A.T. datascape is a digital instrument for analyzing the digitized traces left by its members via many available resources. Its aim is to study as closely as possible the complexity of collaborative interdisciplinary works. The E.A.T. datascape methodology makes it possible, by means of an anthropological action-centred approach, to go beyond the distinction between art history and art sociology and to renew the social history of art by challenging the notion of authorship and by describing the work as constituted by the intersection between heterogeneous trajectories, rather than an object within a context that would influence it, or constitute its environment. In other words, it allows us to reflect on what digital design does, in turn, to the social history of art, and to put forward hypotheses about what a digital social history of art might be or could offer to the study of complex, interdisciplinary projects that are multiplying in the contemporary art world.

#### KEYWORDS

Experiments in Art and Technology, E.A.T., collaboration, digital art history, digital social history of art, digital social art history, digital methods, digital design

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*Sada nam je dostupan drugačiji način stvaranja umjetnosti koji je manje individualan i više socijalan. [...] Umjesto da je objekt koji je izradila jedna osoba, umjetnost postaje proces koji pokreće skupina ljudi, u ovom slučaju umjetnici i inženjeri.*<sup>1</sup>

— John Cage, 1966.

Experiments in Art and Technology ili E.A.T. datascape eksperimentalni je projekt u tijeku koji se od 2011. godine razvija u laboratoriju Sciences Po médialab, u suradnji s inženjerom Paulom Girardom i dizajnerom Danieleom Guidom.<sup>2</sup> Njegov je cilj istražiti složenost interdisciplinarnih radova povezanih s organizacijom E.A.T., koju su 1966. zajedno osnovali umjetnici Robert Rauschenberg i Robert Whitman te inženjeri Billy Klüver i Fred Waldhauer, kako bi podržali suradnju između umjetnika i inženjera.<sup>3</sup>

E.A.T. se pokazao kao složen slučaj, unatoč postojanju brojnih arhiva: maglica sastavljena od vrlo različitih tipova sudionika (umjetnici, inženjeri, posrednici), različitih aktivnosti (dizajn i produkcija, izlaganje, performans, prikupljanje sredstava, uređivanje publikacija itd.), interdisciplinarnih suradnji unutar i izvan umjetničkog svijeta—kolaborativnih djela koja su bila predmet krivih tumačenja i propitivanja, a koja je i dalje teško ocijeniti.<sup>4</sup>

Iz svih navedenih razloga E.A.T. se može smatrati idealnim slučajem u socijalnoj povijesti umjetnosti za digitalnu humanistiku ili onime za što smo skovali termin „digitalna socijalna povijest umjetnosti”. Michela Passini u svojoj knjizi o povijesti povijesti umjetnosti upućuje na nestabilnost značenja pojma „socijalno” (ono na što se taj pojam odnosi) u različitim shvaćanjima „socijalne” povijest umjetnosti.<sup>5</sup> Prema prijedlogu Christophera Wooda, socijalna povijest umjetnosti ovdje se ne shvaća „ni kao sociologija umjetnosti, ni politička povijest umjetnosti, ni povijest mentaliteta, ni povijest materijala, pokroviteljstva, institucija, recepcije ili konzumacije umjetnosti”, već kao „teorija podrijetla umjetnosti” koja prije svega tvrdi da „umjetnost proizlazi iz zajednice”.<sup>6</sup> Ova je definicija naizgled kompatibilna s definicijom „socijalnog” Bruna Latoura kao „traga asocijacija između heterogenih elemenata”.<sup>7</sup> Naše pitanje stoga glasi: Što se dogodi sa socijalnom poviješću umjetnosti ako te asocijacije pratimo digitalnim putem—ne usredotočujući se samo na podrijetlo umjetničkog djela, već i na svaki raspoloživi slijed njegova života?

Željeli bismo pokazati da E.A.T. datascape, kao digitalni instrument i metoda, može ne samo pomoći u pružanju novih uvida u ovu složenu temu socijalne povijesti umjetnosti nego također dovesti do epistemoloških promjena, mijenjajući određene obrasce razmišljanja specifične za samu povijest umjetnosti i, da budemo precizniji, u pogledu pojmova umjetničkog djela, autora i odnosa djela s njegovim takozvanim „kontekstom”. Metodologija E.A.T. datascapea

1 Zaklada za umjetnost, znanost i tehnologiju Daniel Langlois, Montréal, Kolekcija dokumenata koje je objavila organizacija Experiments in Art and Technology, EAT C1–27, napomene Johna Cagea, 29. rujna 1966.

2 Leclercq i Girard, „The Experiments in Art and Technology Datascape”. Prototip koji smo razvili 2011. godine (druga verzija 2012.) dostupan je online, vidi: „E.A.T. datascape”.

3 Breitwieser, *E.A.T.—Experiments in Art and Technology*.

4 Lippard, „Total Theatre?”.

5 Passini, *L'oeil et l'archive. Une histoire de l'histoire de l'art*, 264. Mi smo preveli („l'instabilité du référent social”).

6 „L'histoire sociale de l'art: généalogies et enjeux d'une pratique”.

7 Latour, *Reassembling the social*, 5. „Premda bi većina društvenih znanstvenika preferirala da se pojam ‚socijalno’ odnosi na nešto homogeno, potpuno je prihvatljivo istom riječju označivati trag asocijacija između heterogenih elemenata. Budući da u oba slučaja riječ zadržava isto podrijetlo iz latinskog korijena *socius*, moguće je ostati vjeran izvornoj intuiciji društvenih znanosti redefiniranjem sociologije ne kao ‚znanosti o socijalnom’, već kao praćenja asocijacija.”

*Now we have another way of making art that is less individual and more social. [...] Art, instead of being an object made by one person, becomes a process set in motion by a group of people, in this case artists and engineers.*<sup>1</sup>

— John Cage, 1966.

The Experiments in Art and Technology or E.A.T. datascape is an ongoing experimental project developed at the Sciences Po médialab, from 2011 onwards, with the engineer Paul Girard and the designer Daniele Guido.<sup>2</sup> Its aim is to study the complexity of interdisciplinary works associated with E.A.T., an organization co-founded in 1966 by artists Robert Rauschenberg and Robert Whitman, and engineers Billy Klüver and Fred Waldhauer, and intended to support collaboration between artists and engineers.<sup>3</sup>

E.A.T. presented itself to us as a complicated case, despite the existence of a plethora of archives: a nebula composed of very different kinds of participants (artists, engineers, mediators), diverse activities (design and production, exhibition, performance, fundraising operations, publication editing, etc.), interdisciplinary collaborations within and outside the art world—collaborative works that have been the subject of misunderstandings and questioning, and which remain difficult to evaluate.<sup>4</sup>

For all these reasons, E.A.T. can be considered an ideal case in the social history of art for the digital humanities, or what we coined the “digital social history of art.” Michela Passini notes, in her book on the history of history of art, the instability of the meaning of the “social” (what it refers to) in the various understandings of a “social” history of art.<sup>5</sup> Following a proposition made by Christopher Wood, social history of art is understood here as “neither a sociology of art, nor a political history of art, nor a history of mentalities, nor a history of materials, patronage, institutions, reception or consumption of art,” but as “a theory of the origins of art” that maintains above all that “art emerges from a community.”<sup>6</sup> This definition seems compatible with the definition of the social proposed by Bruno Latour as “a trail of associations between heterogeneous elements.”<sup>7</sup> Our question then is: What happens to the social history of art if we trace these associations by digital means—not only focusing on the origins of an artwork but also on every available sequence of its life?

We would like to show that the E.A.T. datascape, as a digital instrument and method, can not only help provide new insights into this complex topic of the social history of art, but can also lead to epistemological changes, modifying certain habits of thought specific to art history itself, and more precisely, with regard to the notions of a work of art, an author and the relationship of the work to its so-called “context.” The E.A.T. datascape methodology makes it possible

1 Daniel Langlois Foundation for Art, Science, and Technology, Montréal, Collection of Documents Published by Experiments in Art and Technology, EAT C1-27, Remarks by John Cage, September 29, 1966.

2 Leclercq and Girard, “The Experiments in Art and Technology Datascape.” The prototype we developed in 2011 (2nd version, 2012) is available online, see: “E.A.T. datascape.”

3 Breitwieser, *E.A.T.—Experiments in Art and Technology*.

4 Lippard, “Total Theatre?”

5 Passini, *L’œil et l’archive. Une histoire de l’histoire de l’art*, 264. We translated (“l’instabilité du référent social”).

6 “L’histoire sociale de l’art: généalogies et enjeux d’une pratique.”

7 Latour, *Reassembling the social*, 5. “Even though most social scientists would prefer to call ‘social’ a homogeneous thing, it’s perfectly acceptable to designate by the same word a trail of associations between heterogeneous elements. Since in both cases the word retains the same origin—from the Latin root *socius*—it is possible to remain faithful to the original intuitions of the social sciences by redefining sociology not as the ‘science of the social’, but as the tracing of associations.”

omogućuje nadilaženje razlike između povijesti umjetnosti i sociologije umjetnosti opisivanjem djela kao sačinjenoga presijecanjem heterogenih trajektorija, a ne kao objekta u kontekstu koji bi na njega mogao utjecati. Drugim riječima, omogućuje nam razmišljanje o tome što digitalni dizajn čini zauzvrat za socijalnu povijest umjetnosti, kao i iznošenje hipoteza o tome što bi digitalna socijalna povijest umjetnosti mogla biti.

Stoga ćemo predstaviti metodologiju i detaljno opisati četiri mogućnosti koje *datascape* nudi povjesničarima umjetnosti kako bi obnovili istraživačke prakse u socijalnoj povijesti umjetnosti s pomoću digitalne tehnologije: plošni prikaz identificiranjem tragova u izvorima (aktivnosti, akteri, postupci i mjesta); praćenje povijesti kolaborativnih radova (prema povijesti djela); praćenje aktera i njihova djelovanja; povezivanje pomnog, mezo i udaljenog čitanja; umnožavanje gledišta na entitete te njihove odnose i trajektorije. Kao rezultat, inzistirat ćemo na mogućnosti, u digitalnoj povijesti umjetnosti, boljeg analiziranja isprepletenih trajektorija i integriranja „konteksta” u objekt.

PLOŠNI PRIKAZ IDENTIFICIRANJEM  
TRAGOVA U IZVORIMA: AKTIVNOSTI, AKTERI,  
POSTUPCI I MJESTA

E.A.T. *datascape* primarno je osmišljen za istraživanje složenosti projekta E.A.T.: složenosti suradnji između umjetnika i inženjera, i kao rezultata, bio on djelo ili projekt, i kao kolaborativnog procesa, i drugo, složenosti same organizacije E.A.T. Prva dva istraživačka pitanja koja su se postavila bila su „Što je E.A.T.?” i „Što je suradnja između umjetnika i inženjera?”

Osmislili smo *datascape*: digitalni instrument za istraživanje i analizu digitaliziranih tragova koje su ostavili ti umjetnici, inženjeri i drugi „akteri” (posrednici, kustosi itd.) kroz mnoge dostupne resurse koje je organizacija sačuvala u svojoj arhivi. Taj je instrument ujedno i digitalna metoda koja može modificirati našu praksu kao povjesničara umjetnosti, kao i razumijevanje naših predmeta istraživanja. Naše su namjere bile predložiti „način kretanja kroz te *datascape*ove s monadološkim gledištem, u cilju obuhvaćanja bogatstva asocijacija, ostajući vjeran složenosti agenata.”<sup>8</sup>

Kako bi se izbjegle bilo kakve prenapadne prosudbe i kako bi se omogućilo podacima da govore sami za sebe, metodologija se prije svega sastoji od osmišljavanja podatkovnog modela koji ne uključuje prethodno osmišljene agregacije ili analitičke koncepte. Naš podatkovni model opisuje „aktivnosti” i pojedince koji su oko njih zaposleni („akteri”) u određenom vremenu („postupci” ili „faze” ili sljedovi) i na određenom mjestu („mjesta”), umjesto prihvaćanja hijerarhijskog pristupa u kojem prema zadanim postavkama prevladava djelo. Usvajanjem pristupa prema umjetnosti koji je usmjeren na djelovanje, pokušali smo plošno prikazati svijet umjetnosti organizacije E.A.T. kao informacijski krajolik otvoren za upite: tko je što napravio i kada?<sup>9</sup> Stoga smo

to go beyond the distinction between art history and art sociology by describing the work as constituted by the intersection between heterogeneous trajectories, rather than as an object within a context that might influence it. In other words, it allows us to reflect on what digital design does, in turn, to the social history of art, and to put forward hypotheses about what a digital social history of art might be.

Therefore, we will present the methodology and detail four possibilities offered by the *datascape* to art historians to renew research practices in the social history of art through digital technology: to re-flatten by identifying traces in sources (activities, actors, actions and places); to trace the history of collaborative works (towards a history of works); to monitor actors and their agencies; to associate close, meso and distant reading; to multiply the points of view on entities and their relations and trajectories. As a result, we will insist on the possibility, in the digital history of art, of better studying entangled trajectories, and integrating the “context” into the object.

8

Latour, *et al.*, „The Whole Is Always Smaller than Its Parts’—a Digital Test of Gabriel Tarde’s Monads”, 606.

9

U tom pogledu metodologija je bliska pristupu Alfreda Gella antropologiji umjetnosti: „Umjesto na simboličku komunikaciju, sav naglasak stavljam na *djelovanje*, *namjeru*, *kauzaciju*, *rezultat* i *transformaciju*. Na umjetnost gledam kao na sustav djelovanja, namijenjen mijenjanju svijeta, a ne kodiranju simboličkih propozicija o njemu. Pristup umjetnosti usmjeren na ‚djelovanje’ inherentno je više antropološki nego alternativni semiotički jer se bavi praktičnom posredničkom ulogom umjetničkih objekata u socijalnom procesu, a ne interpretacijom objekata ‚kao da’ su tekstovi.” Gell, *Art and agency*, 6.

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Brosens, *et al.*, „MapTap and Cornelia. Slow Digital Art History and Formal Art Historical Social Network Research”, 315. „Skovali smo izraz ‚spora digitalna povijest umjetnosti’ za opisivanje svoje metodologije istraživanja i filozofije. Pritom *ne* želimo implicirati da postoji određena vrsta ‚brze digitalne povijesti umjetnosti’, pogotovo ne one koja bi bila lošije kvalitete. Jednostavno želimo naglasiti da našoj uporabi digitalnih alata prethodi, inspirira je i pokreće dugotrajan proces pretraživanja, prikupljanja, organiziranja i obrade ogromne količine i širokog spektra arhivskih dokumenata koji sadržavaju bogate, ali složene podatke. Taj je proces za sve namjere i svrhe spor.”

11

Moretti, *Distant reading*.



prvo identificirali popis aktivnosti povezanih s organizacijom E.A.T. (što?). Zatim smo u dostupnim arhivima za svaku od navedenih aktivnosti locirali tragove različitih postupaka ili „faza“ (kada?) koji se pojavljuju u njihovim životima, vodeći računa da identificiramo uključene „aktere“ (tko?) i, ako je bilo moguće, lokaciju njihova djelovanja (gdje?). Šest registara oznaka specifičnih za predmet koji se istražuje (npr. tehnološki pojmovnik, pojmovnik umjetnosti itd.) upotpunjuje te informacije. Taj dugačak proces odgovara onome što su Brosens i suradnici nazvali „sporom digitalnom poviješću umjetnosti“.<sup>10</sup>

Na temelju te baze podataka koja se puni ručno, E.A.T. datascape predlaže vizualizacije podataka koje se sastoje od tri vrste stranica. Nazvali smo ih Pregled, Akter i Aktivnost. Svaka od tih stranica dijeli iste aspekte—aktere (popis aktera), vrijeme (vremenska crta) i prostor (karta). Te su stranice prije svega međusobno povezane radi pregledavanja informacija hipertekstualnim istraživanjem. *Datascape* pruža sinoptičke, sekvencijske i retikularne prikaze koji odgovaraju različitim razinama agregacije podataka. Stoga prikazuje i kvalitativne i kvantitativne podatke, omogućujući povjesničaru umjetnosti da vizualizira izvore iz kojih su podaci izvučeni te da kombinira pomno, mezo i „udaljeno čitanje“<sup>11</sup> ove posebne organizacije putem tih triju različitih vrsta stranica.

Kao što ćemo vidjeti, metodologija *datascapea* daje posebnu važnost pojmovima digitalnog traga, suprisutnosti, traga i trenda te favorizira ono što bismo mogli nazvati digitalnim slučajnim otkrićima putem hipertekstualne navigacije.

8

Latour *et al.*, “‘The Whole Is Always Smaller than Its Parts’—a Digital Test of Gabriel Tarde’s Monads,” 606.

9

In this respect, the methodology is close to Alfred Gell’s approach to the anthropology of art: “In place of symbolic communication, I place all the emphasis on *agency, intention, causation, result, and transformation*. I view art as a system of action, intended to change the world rather than encode symbolic propositions about it. The ‘action’-centered approach to art is inherently more anthropological than the alternative semiotic approach because it is preoccupied with the practical mediatory role of art objects in the social process, rather than with the interpretation of objects ‘as if’ they were texts.” Gell, *Art and Agency*, 6.

10

Brosens *et al.*, “MapTap and Cornelia. Slow Digital Art History and Formal Art Historical Social Network Research,” 315. “We coin the expression ‘slow digital art history’ for describing our research methodology and philosophy. In doing so, we do *not* wish to imply that there is some kind of ‘fast digital art history’—let alone one that would be of inferior quality. We simply want to highlight that our use of digital tools is preceded, inspired, and fueled by a time-consuming process of searching, collecting, organizing, and processing a vast amount and a wide array of archival documents containing rich yet complex data. This process is, for all intents and purposes, slow.”

## RE-FLATTENING BY IDENTIFYING TRACES IN SOURCES: ACTIVITIES, ACTORS, ACTIONS AND PLACES

The E.A.T. datascape was initially designed to explore first the complexity of E.A.T.: the complexity of collaborations between artists and engineers both, as a result, be it a work or a project, and as a collaborative process and, second, the complexity of the E.A.T. organization itself. The two initial research questions were “What is E.A.T.?” and “What is an artist-engineer collaboration?”

We designed a *datascape*: a digital instrument for the exploration and analysis of digitized traces left by these artists, engineers and other “actors” (mediators, curators, etc.) through many available resources preserved by the organization in its archive. This instrument is also a digital method, able to modify our practices as art historians and the understanding of our objects of study. Our intention was to propose “a way of navigating through these datascares with a monadological point of view, aiming at capturing the richness of associations while remaining faithful to the complexity of agents.”<sup>8</sup>

To avoid any hasty judgments and make the data speak for itself, the methodology consists first of all in designing a data model which does not embed pre-thought aggregations or analytical concepts. Our data model describes “activities” and individuals who are busy around them (“actors”) at a given time (“actions” or “phases” or sequences) and in a given place (“places”), instead of adopting a hierarchical approach in which the work prevails by default. By adopting an action-oriented approach to art, we have tried to re-flatten the E.A.T. world of art into an information landscape opened to inquiries: who did what and when?<sup>9</sup> We therefore first identified a list of activities associated with E.A.T. (what?). We then located in the available archives, and for each of these activities, the traces of the different actions or “phases” (when?) that punctuate their lives, taking care to identify the “actors” involved (who?) and, if possible, the location of their action (where?). Six tag registers more specific to the subject under study (e.g. technology glossary, art glossary, etc.) complete this information. This lengthy process corresponds to what Brosens *et al.* termed “slow digital art history.”<sup>10</sup>

Based on this database filled by hand, the E.A.T. datascape proposes data visualizations composed of three types of pages. We named them the “Overview” page, the “Actor” page and the “Activity” page. Each of these pages shares the same facets—actors (list of actors), time (timeline) and space (map). Above all, these pages are linked together in order to browse the information through hypertextual exploration. The datascape provides synoptic, sequential and reticular views corresponding to different levels of data aggregation. It, therefore, displays both qualitative and quantitative data—allowing the art historian to

PRAĆENJE POVIJESTI  
KOLABORATIVNIH RADOVA

Kao što je prethodno spomenuto, jedno od početnih istraživačkih pitanja odnosilo se na podrijetlo umjetničkih djela i pitanje intencionalnosti u kolaborativnom djelu<sup>12</sup> kako bi se bolje razumjeli ishodi i procijenila suradnja između umjetnika i inženjera za razliku od puke delegacije, za koju se zalažu neki znanstvenici.<sup>13</sup> Na određeni način, E.A.T. datascape stoga predstavlja odgovor na poziv sociologa Laurenta Jeanpierrea za „embriologiju stvaranja”,<sup>14</sup> kako bi se bolje razumjele umjetnikove namjere u eksperimentalnim umjetničkim djelima kroz prikupljanje i pružanje informacija o kreativnom procesu identificiranom u nekoliko izvještaja o Klüverovim kolaborativnim iskustvima. Kako nam novi oblici pisanja i čitanja (vizualizacije) koji su formom bliži promatranim procesima—koji se odvijaju tijekom vremena—mogu bolje pomoći da ih razumijemo?<sup>15</sup>

Zbog toga smo odabrali prikazati život<sup>16</sup> djela i projekata („aktivnosti”) prema slijedu faza koje se *a priori* smatraju linearnima i sukcesivnima, s primarnim ciljem razlikovanja „faze osmišljavanja”, koja je specifična za umjetnika, od više kolektivne „faze produkcije”, koju vodi inženjer. Prema Howardu Beckeru, svaka od tih faza zamišljena je kao „mreža suradnji” koja uključuje istodobno prisutne aktere (bilo ljude ili organizacije) koji sudjeluju u zajedničkom „svijetu umjetnosti”.<sup>17</sup>

Stranica aktivnosti posvećena djelu *Oracle* (sl.1), radu za koji se zna da ga je između 1962. i 1965. izradio Rauschenberg u suradnji s Klüverom, služi kao primjer. Osim kratkog opisa koji se sastoji od niza oznaka (vrsta djela, umjetnost i tehnologija), sastoji se od prethodno spomenutih aspekata: vremenske crte koja prikazuje život djela, popisa uključenih aktera, karte mjesta navedenih u tim fazama te, posebno u ovome slučaju, popisa izvora koji opravdavaju razgraničenje faza i identifikaciju aktera. Stranica je interaktivna: omogućuje sortiranje podataka po fazama uz pregled samo relevantnih osoba i izvora. Posebno, to je jedina stranica koja omogućuje „pomno čitanje” (engl. *close reading*).

Koji se argumenti mogu izvući iz te vizualizacije?

1. Složenost djela ističe se prisutnošću više denominacija. U ovom slučaju različite oznake (okolina—koncert—skulptura—interaktivno—zvučna instalacija) odgovaraju mnogim načinima na koji su akteri—umjetnik, inženjer, kustosi itd.—opisali ovo provokativno djelo, koje dovodi u pitanje postojeće umjetničke kategorije.

2. (rezultat povezan s istraživanjem) To pokazuje da je suradnja očigledno bila učinkovita, s obzirom na to da nakon prve faze osmišljavanja između 1960. i 1962. u analizi izvora i tijekom druge faze usmjerene na produkciju (1962.–1965.) nismo mogli razabrati redizajn produkcijskih djela.<sup>18</sup>

visualize the sources from which the data was extracted, and to combine close, meso and “distant reading”<sup>11</sup> of this particular organization through these three different kinds of pages.

As we will see, the datascape methodology gives particular importance to the notions of digital trace, co-presence, clue and trend, and favors what we might call digital serendipity through hypertextual navigation.

12

Kao primjer, Klüver je u svojim izvještajima pokušao razlikovati estetiku od tehničkih izbora, koji su, kako tvrdi, često pogrešno shvaćeni. Vidi Klüver, „Working with Rauschenberg”.

13

Vidi, na primjer, During, „De quelques régimes d'expérimentation en art”.

14

Jeanpierre, „Introduction aux conditions de l'art expérimental”. Također možemo primijetiti da datum objave *online* istraživačkog instrumenta (2011.) odgovara članku Johanne Drucker, u kojem piše, koristeći se primjerom publikacije četrnaest romana 1855. godine, da „se datum djela, u pogledu njegova kulturnog identiteta i relevantnosti, može razmatrati u odnosu na bilo koju varijablu, a ne samo na vrijeme njegove publikacije”. Drucker, „Humanities Approaches to Graphical Display”, paragrafi 22 (i slika 4) i 23.

15

Ovo je pitanje postavljeno na nizu konferencija održanih u laboratoriju EnsadLab u Parizu pod nazivom „Forme pisanja i kreativni proces”, na koje smo bili pozvani 16. ožujka 2018. Ovdje opet možemo spomenuti vremensku perspektivu ili „vjernost biografskom” kojemu Gell u svojem pristupu antropologiji umjetnosti daje prednost: „Antropologija se stoga usredotočuje na „čin’ u kontekstu „života’ ili, točnije, „životne faze’ agenta. Temeljna periodičnost antropologije jest životni ciklus.” Gell, *Art and agency*, 9.

16

Gosden i Marshall, „The Cultural Biography of Objects”.

17

„Umjetnički se svjetovi sastoje od osoba čije su aktivnosti nužne za stvaranje karakterističnih djela koja taj svijet, a možda i drugi, definiraju kao umjetnost. [...] Umjetnička djela, s ovoga gledišta, nisu proizvodi pojedinih stvaralaca, „umjetnika’ koji posjeduju rijedak i poseban dar. Ona su zajednički proizvodi svih osoba koje surađuju putem karakterističnih konvencija umjetničkog svijeta kako bi takva djela ostvarili.” Becker, *Art worlds*, 34–35.

18

Klüver je u svojem osvrtu „Working with Rauschenberg” spomenuo da su izrađena barem tri sustava koja je umjetnik odbio, što odražava brojne iteracije i samim time moguću suradnju.

19

Ovdje se udaljavamo od definicije antropologije umjetnosti Alfreda Gella, koja je razlikuje od estetike.

20

Ovdje mislimo na naziv tečajeva Sophie Duplaix u Ecole du Louvre: „La vie mouvementée des oeuvres d'art contemporain”.

21

To je potvrđeno nedavnim istraživanjem o svakodnevnom životu umjetničkih djela. Yaël Kreplak daje još jedan primjer s Takisovim *Mur magnétique n°9 (Rouge)*, 1961.–1972. Poteškoće koje su se pojavile tijekom izlaganja ovog djela u prostoru Palais de Tokyo 2015. godine rezultirale su boljim opisom samoga djela. Kreplak, „On Thick Records and Complex Artworks”.



3. (sretno otkriće) Također otkriva poteškoće institucije u očuvanju i izlaganju ovog djela, o čemu svjedoče brojne faze restauracije koje prethode nizu izložbi, a u kojima je ponajviše Klüver bio prisiljen razlikovati između tehničkih i estetskih odabira u svojim osvrtima.

Što digitalno čini povijesnumjetničkim praksama? Mogućnost vizualizacije mnogih sljedova života nekog djela kao cjeline ima nekoliko međusobno povezanih posljedica.

1. Povijesnumjetnička i estetska pitanja čine se manje različita od praktičnih pitanja nego što bi se moglo pomisliti.<sup>11</sup> Moguće formalne varijacije ili verzije djela, kao i poteškoće, najčešće nepredviđene, s kojima se susrećemo tijekom njegova više ili manje ispunjenog života<sup>20</sup> (događaji ili postupci kao što su izlaganje, restauracija itd.) mogu nas itekako informirati o intrinzičnim i razlikovnim svojstvima dotičnog djela.<sup>21</sup>

11

Moretti, *Distant reading*.

12

As an example, Klüver tried to discriminate in his reports the aesthetics from the technical choices, according to him frequently misunderstood. See Klüver, "Working with Rauschenberg."

13

See for instance During, "De quelques régimes d'expérimentation en art."

14

Jeanpierre, "Introduction aux conditions de l'art expérimental." We can also note that the date of the release of the online research instrument (2011) corresponds to Johanna Drucker's article, in which she writes, using the example of the publication of fourteen novels in 1855, that "the date of a work, in terms of its cultural identity and relevance, can be considered in relation to any number of variables, not just the moment of its publication." Drucker, "Humanities Approaches to Graphical Display," paragraphs 22 (and figure 4) and 23.

15

This is the question raised by a series of conferences at EnsadLab, Paris, entitled "Forms of writing and the creative process," to which we were invited on March 16, 2018. Here, again, we can refer to the time perspective or "fidelity to the biographical" privileged by Gell in his approach to anthropology of art: "Anthropology therefore tends to focus on the 'act' in the context of the 'life'—or more precisely, the 'stage of life'—of the agent. The fundamental periodicity of anthropology is the life cycle." Gell, *Art and agency*, 9.

16

Gosden and Marshall, "The Cultural Biography of Objects."

17

"Art worlds consist of all the people whose activities are necessary to the production of the characteristic works which that world, and perhaps others as well, define as art. [...] Works of art, from this point of view, are not the products of individual makers, 'artists' who possess a rare and special gift. They are, rather, joint products of all the people who cooperate via an art world's characteristic conventions to bring works like that into existence." Becker, *Art worlds*, 34–35.

18

Klüver mentioned in his account "Working with Rauschenberg" that at least 3 systems had been created and rejected by the artist, reflecting numerous iterations and thus a possible collaboration.

## TRACING THE HISTORY OF COLLABORATIVE WORKS

As mentioned above, one of the initial research questions addressed the origin of the works of art and the question of intentionality in a collaborative work,<sup>12</sup> in order to better understand the outcomes and to assess the collaboration between artists and engineers, opposed to mere delegation, as has been argued by some scholars.<sup>13</sup> In a certain way, the E.A.T. datascape thus responds to the sociologist Laurent Jeanpierre's call for an "embryology of creation,"<sup>14</sup> to better understand the artist's intentions in experimental works of art, through collecting and providing information on the creative process identified in several reports on Klüver's collaborative experiences. How can new forms of writing and reading (visualization) more closely related in form to the observed processes—occurring over time—help us understand them better?<sup>15</sup>

This is why we chose to represent the life<sup>16</sup> of works and projects ("activities") according to a sequence of phases considered a priori to be linear and successive, aiming initially at distinguishing a "conception phase," specific to the artist, from a more collective "production phase," led by the engineer. Following Howard Becker, each of these phases was conceived as a "network of cooperation" involving co-present actors (be they people or organizations) participating in a common "art world."<sup>17</sup>

The activity page dedicated to *Oracle* (Fig. 1), a work known to have been created between 1962 and 1965 by Rauschenberg in collaboration with Klüver, serves as an example. In addition to a brief description composed of a series of tags (type of work, art and technology), it consists of the facets mentioned above: a timeline deploying the life of the work, a list of actors involved, a map of the places listed in these phases, and specifically here, a list of sources justifying the delimitation of the phases and the identification of the actors. The page is interactive: it allows you to sort the information by phase by viewing only the relevant people and sources. It is especially the only page that allows a "close reading."

What arguments can be made from this visualization?

1. The complexity of the work is highlighted by the presence of multiple denominations. In this case, the various tags (environment—concert—sculpture—interactive—sound—installation) correspond to the many ways in which actors—artist, engineer, curators, etc.—described this provocative work, which challenges existing art categories.

2. (a finding associated with research) This shows that the collaboration was apparently effective since it was not possible for us, after the first conception phase between 1960 and 1962, to discern, in the analysis of the sources and during the second production-oriented phase (1962–1965), the redesign of the work's production;<sup>18</sup>

Overview video graph credits SciencesPo médialab

# ORACLE WORK

RELATED ACTIVITIES E.A.T. PRESS CONFERENCE AND EXHIBITION

radio • sound | environment • concert • sculpture • interactive • sound installation

## TIMELINE

drag the triangle to zoom

MIN MAX

EXHIBITIONS OTHER PHASES

Mar. 1960 Jun. 2019

Conception, Production  
Jan. 1962 to May 1965

MAR. 1960 JUN. 2019

## ACTORS

PER BIORN  
LEO CASTELLI  
TED DILLENKOFER  
TOBY FITCH  
HAROLD HODGES  
PONTUS HULTEN  
BILLY KLUVER  
ROBERT RAUSCHENBERG  
BELL TELEPHONE LABORATORIES  
MUSEE NATIONAL D'ART MODERNE / CENTRE DE CREATION INDUSTRIELLE  
LEO CASTELLI GALLERY  
MUSEUM LUDWIG, KÖLN  
THE MUSEUM OF MODERN ART (MOMA)  
SOLMON R. GUGGENHEIM MUSEUM  
STEDELJK MUSEUM, AMSTERDAM

Robert Rauschenberg and Billy Klüver working on Oracle in Robert Rauschenberg's Studio, late 1964-early 1965. Photographer unknown. Courtesy E.A.T.

Robert Rauschenberg and Billy Klüver working on Oracle in Robert Rauschenberg's Studio, late 1964-early 1965. Photographer unknown. Courtesy E.A.T.

Robert Rauschenberg and Billy Klüver stand with Oracle, in Robert Rauschenberg's Studio, late 1964-early 1965. Photographer unknown. Courtesy E.A.T.

Slika 1.— E.A.T. Datascape. Internetska stranica aktivnosti „Oracle“. Snimka zaslon. CC BY médialab. Sciences Po, 2019. /

Figure 1.— E.A.T. Datascape. Webpage of the activity “Oracle.” Screenshot. CC BY médialab. Sciences Po, 2019.

Overview video graph credits

SciencesPo. médiab

# E.A.T. DATASCAPE

## MOON MUSEUM COLLECTIVE WORK

ceramics | planar image

### TIMELINE

drag the triangle to zoom

MIN MAX

EXHIBITIONS OTHER PHASES

Sept. 1968 Jun. 2019

Annick Bureau and Jade Dellinger, "All Systems Are Go: A Museum for the Moon", Exhibition Catalogue  
Publication  
Sept. 2009 to Sept. 2009

### ACTORS

- JOHN CHAMBERLAIN
- GRACE GLUECK
- BILLY KLÜVER
- JULIE MARTIN
- ROBERT MERIGLE
- FORREST MYERS
- DAVID NOVROS
- CLAES OLDENBURG
- ROBERT RAUSCHENBERG
- FRED WALDHAUER
- ANDY WARHOL
- THE MUSEUM OF MODERN ART (MOMA)
- THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)
- TATE MODERN
- JADE DELLINGER
- ANNICK BUREAU
- HENRY GELDZHALER

Sept. 1968 JUN. 2019

Moon Museum. Exhibition catalogue. Georgian National Museum, 2013 (excerpt)

"The Moon Museum (1969): Apollo XI's Secret Art Mission. August 22 – September 27, 2014. Opening and Reception: August 22, 6 – 8pm In..."

"The small rooms at the back of the Eyal Ofer Galleries were not the right setting for Grace (1962-5, Mus[ée] National d'Art Moderne, Centre..."

Andy Warhol, Claes Oldenburg, David Novros, Forrest Myers, Robert Rauschenberg, John Chamberlain, Moon Museum, 1969, exhibited in EAT (Experiments in Art and Technology: Open-ended, National Museum of Modern and Contemporary Art, Seoul, Korea (26 May to 16 September 2018))

Telegram

Slika 2. — E.A.T. Datascape. Internetska stranica aktivnosti „Moon Museum“. Snimka zaslona. CC BY médiab. Sciences Po, 2019. / Figure 2. — E.A.T. Datascape. Webpage of the activity “Moon Museum.” Screenshot. CC BY médiab. Sciences Po, 2019.

↑

2. Djelo postoji zahvaljujući djelovanju za koje smo ga oblikovali, kao i djelovanju na koje nas potiče: od njegova osmišljavanja i produkcije do izlaganja i publiciranja. Važno je da se tijekom našeg tekućeg projekta činilo da publikacije o djelu, poput osvrti o iskustvima, izvještaja u općem i specijaliziranom tisku ili akademskih istraživanja o njemu (koje su se u početku smatrale samo „izvorima”) također na svoj način pridonose životu djela time što potvrđuju njegovu postojanje (sl. 2.). Na primjer, posebno detaljan izvještaj o iskustvu informirat će naš pogled na djelo. Rezultat je pomirenje „oka i arhive” i nov način kombiniranja djela i povezanih dokumenata (fotografije, tekstovi, govori).<sup>22</sup> Kao rezultat, to omogućuje da se definira korisna razlika između onoga što je poznato kao život djela, na primjer kronološko i fizičko kretanje ili itinerar djela koje može „izumrijeti” ako ga se uništi, i onoga za što predlažemo da zovemo *trajektorijama* kojima se djelo može učiniti javnim.

3. Vizualizacije *datascapea* pomažu povjesničarima umjetnosti da razmišljaju u pogledu akumulacije („i”), a ne alternative („ili”), zahvaljujući upotrebi oznaka za opisivanje djela i njegovih faza i vizualizaciji događaja koji se odvijaju u isto vrijeme. Taj kumulativni pristup djelomično odgovara definiciji „suvremenog” Lionela Ruffela, koja se temelji na simultanosti i jukstapoziciji te je stoga kritična prema povijesnoj sekvencijalnosti i linearnosti (povezanima s modernističkim načinom), premda je u našem slučaju vjerojatno točnije reći da nastojimo kombinirati, a ne suprotstavljati ta dva pristupa.<sup>23</sup> Doista, važno je napomenuti da se taj kontinuum ne sastoji samo od sukcesivnih faza prema isključivo linearnoj shemi, već od sljedova koji istodobno mogu biti sukcesivni, paralelni i međusobno povezani (prva dva prikazana, a potonji prepušten diskrecijskom tumačenju interpretatora), tako da je vjerojatno preciznije opisati djelo u pogledu *ispripletenih trajektorija*.<sup>24</sup> Važna posljedica toga je, prije svega, izostanak strogog suprotstavljanja izraza: djelo i proces (ili određena ideja trajnosti naspram promjene) ili djelo i kontekst (budući da akteri nisu „oko” rada, već sudjeluju u njegovu postojanju) te njihovo predstavljanje i razmišljanje o njima u cjelini.

4. Kao rezultat, to pojačava ideju umjetničkog djela percipiranog kao *kontinuum koji se sastoji od događaja* ili djelovanja i, očigledno, u našem slučaju, od društveno-tehničkih mreža, koji nas mogu svaki na svoj način informirati kako o svojstvima djela tako i o različitim oblicima njegova postojanja.<sup>25</sup> Drugim riječima, integriramo kontekst u djelo.<sup>26</sup>

→

3. (a fortuitous finding) It also reveals the difficulty for the institution in preserving and exhibiting this work, as evidenced in the numerous restoration phases that precede a series of exhibitions, most notably Klüver being forced to distinguish between technical and aesthetic choices in his accounts.

What the digital does to art historian practices?

The possibility of visualizing as a totality many sequences of the life of a work has several interrelated consequences:

1. Art history and aesthetic questions seem less distinguishable than one might have thought from practical matters.<sup>19</sup> The possible formal variations or versions of the work, as well as the difficulties—most often unforeseen—encountered during its more or less eventful life<sup>20</sup> (events or operations such as exhibition, restoration, etc.), can indeed inform us about the intrinsic and distinctive properties of the work in question.<sup>21</sup>

22

Ovaj se pristup podudara s drugim važnim historiografskim strujama koje je Michela Passini dobro opisala u svojoj knjizi *L'oeil et l'archive*. Postoje, na primjer, afiniteti s djelima Huberta Janitscheka i Eugènea Müntza, „koji su iskazivali posebnu pažnju prema životima umjetničkih djela” na kraju 19. stoljeća, zahvaljujući njihovu shvaćanju umjetničke produkcije kao „skupa odnosa, kako intelektualnih, tako i materijalnih i financijskih, između različitih aktera”. Passini, *L'oeil et l'archive. Une histoire de l'histoire de l'art*, 63.

23

Ruffel, *Brouhaha: les mondes du contemporain*. Prema njemu, taj pristup daje prednost prostornom modelu, a ne vremenskom kontinuitetu. Mi želimo kombinirati oba elementa, jer se događaji odvijaju u vremenu.

24

Željeli bismo zahvaliti članovima programa Ancient Itineraries na plodnoj razmjeni koncepata vezanih uz biografije, itinerare i trajektorije objekata. Ovdje se preferira pojam „trajektorija” umjesto pojma „itinerar”, koji obično implicira više prostorno razumijevanje putova objekata.

25

Ovdje mislimo na „oblik postojanja” kako ga je upotrebljavao umjetnik Franck Leibovici. Leibovici, *Des Formes de Vie*.

26

Zahvalan sam Mariji Giuliji Dondero što me je informirala da je, na području semiotike, većina Greimasovih učenika napustila pojam konteksta. Fontanille, *Pratiques sémiotiques*.

27

Gombrich u svojem uvodu u povijest umjetnosti piše: „Umjetnost ne postoji. Postoje samo umjetnici.” A mi bismo dodali „... i djela”. Gombrich, *The Story of Art*, 5.



PRAĆENJE AKTERA I NJIHOVA  
DJELOVANJA

Jedna od naših prvobitnih namjera bila je moći pratiti u biti ljudske aktere s kojima smo se susreli mnogo puta u arhivima i koji su imali različite oblike uključenosti. Znamo kakva se važnost pridaje životima umjetnika u povijesti umjetnosti, od Vasarija do Gombricha.<sup>27</sup> Sa svoje strane proširili biografsko načelo na sama djela i preokrenuli redoslijed važnosti generiranjem stranica „aktera” na temelju različitih angažmana (barem spomenuta prisutnost) u identificiranim fazama aktivnosti. Također smo proširili status aktera na bilo koga uključenog (ne samo umjetnike), kako bismo bolje opisali „mreže suradnje” opisane u Beckerovu radu *Svjetovi umjetnosti*.

19

It is here that we distance ourselves from Alfred Gell's definition of art anthropology, which distinguishes it from the aesthetics.

20

We refer here to the title of Sophie Duplaix' courses at the Ecole du Louvre: "La vie mouvementée des oeuvres d'art contemporain."

21

This is confirmed by recent research on the everyday life of works of art. Yaël Kreplak provides another example with *Mur magnétique n° 9 (Rouge)* by Takis, 1961/1972. The difficulties met during the exhibition of this work at the Palais de Tokyo in 2015 lead to a better description of the work itself. Kreplak, "On Thick Records and Complex Artworks."

22

This approach is coincident with other important historiographical currents well described by Michela Passini in her book, *L'oeil et l'archive*. There are, for instance, affinities with the work of Hubert Janitschek, and Eugène Müntz, "particularly attentive to the life of works of art" at the end of the 19th century, due to their understanding of artistic production as "the set of relationships—both intellectual and material and financial—between different actors." Passini, *L'oeil et l'archive*.

*Une histoire de l'histoire de l'art*, 63.

23

Ruffel, *Brouhaha: les mondes du contemporain*. According to him, this approach favors a spatial model rather than temporal continuity. We want to combine both since events occur over time.

24

We would like to thank the members of the Ancient Itineraries program for the fruitful exchanges on the concepts of biographies, itineraries and trajectories of objects. "Trajectory" is preferred here to "itinerary," which tends to imply a more spatial understanding of the object's paths.

25

We refer here to the use made of "mode of existence" by the artist Franck Leibovici. Leibovici, *Des Formes de Vie*.

26

I am grateful to Maria Giulia Dondero for having informed me that, in the field of semiotics, most of Greimas' students had abandoned the notion of context. Fontanille, *Pratiques sémiotiques*.

2. A work exists by virtue of what we make it do as well as of what it makes us do: from its conception and production to its exhibition and publication. Notably, during our ongoing project, it seemed that publications about the work—such as accounts of experiences, reports in the general and specialized press or academic research about it (considered initially to be mere "sources")—also contribute to the life of the work in their own ways by making it exist (Fig. 2). For instance, a particularly elaborate experience report will inform our view of the work. The result is a reconciliation of the "eye and the archive," and a new way of combining work and related documents (photographs, writing, speeches).<sup>22</sup> As a result, a useful distinction can then be made between what is known as the *life* of works—the chronological and physical circulation or itinerary of a work which can "die" if it is destroyed, for example—and what we propose to call the *trajectories* by which the work can be made public.

3. The datascape's visualizations help the art historian think in terms of accumulation ("and") and not alternative ("or"), through the use of tags to describe the work and its phases, and the visualization of events occurring at the same time. This cumulative approach partially corresponds to Lionel Ruffel's definition of "the contemporary," based on simultaneity and juxtaposition, and is, therefore, critical of historical sequentiality and linearity (associated with a modernist way)—although it is probably more accurate to say in our case that we tend to combine rather than oppose the two approaches.<sup>23</sup> Indeed, it is important to note that this continuum does not consist *only* of successive phases, according to a merely linear scheme, but of sequences that can be both successive, parallel and interlinked (the former two being displayed, the latter being left to the interpreter's discretion), so it is probably more accurate to describe the work in terms of *entangled trajectories*.<sup>24</sup> This has, above all, the important consequence of no longer strictly opposing term to term: work and process (or a certain idea of permanence as opposed to change), or work and context (since the actors are not "around" the work but participate in its existence), but of representing and thinking of them together.

4. As a result, this reinforces a conception of the artwork perceived as a continuum composed of events or agencies—and obviously, in our case, of socio-technical networks—that can inform us, each in its own way, about both the properties of the work and its different modes of existence.<sup>25</sup> In other words, we integrate the context into the work.<sup>26</sup>

→

MONITORING ACTORS AND  
THEIR AGENCIES

Kao rezultat, stranica aktera opisuje profil aktera, popraćen umjetničkim i tehnološkim oznakama aktivnosti u koje je uključen, čiji se popis pojavljuje ispod njegova imena; vremenskom crtom faza u kojima se pojavljuje, popisom na kojem su rangirani ostali akteri s kojima je bio najviše zajedno prisutan u navedenim fazama; te konačno, kartom njegovih različitih mjesta intervencije. Takva se stranica može interpretirati kao prikaz jednog čvorišta na većoj mreži suradnji umjetnik—umjetnik koju je moguće izračunati iz baze podataka. *Datascape* je alternativni vizualizacijski instrument mrežnoj analizi. Mrežna vizualizacija predstavlja sustav koji istodobno smanjuje pojedinačne detalje kako bi pojačao efekte strukture. *Datascape* čini suprotno, omogućujući korisniku da vidi sve detalje, a kasnije da otkrije strukturne efekte hipertekstualnom navigacijom (ili preuzimanjem mreže i upotrebom softvera za mrežnu analizu). Stoga se složenost iščitava prije nego što je kvantifikacija razbije kako bi se izvukli „globalni” učinci.<sup>28</sup>

Koji se argument može izvući iz te vizualizacije?

1. Ovdje ponovno složenost aktera dolazi do izražaja zahvaljujući višestrukim denominacijama. Na primjer, David Tudor (sl. 3) više se ne pojavljuje, kao što je obično predstavljen, kao skladatelj i glazbenik, već kao umjetnik koji vjerojatno djeluje izvan strogo glazbenog polja („kazalište”), koristeći se, primjerice, novim tehnologijama („audiosustavi” i „elektrotehnika”).

2. Također je moguće izmjeriti stupanj uključenosti aktera u E.A.T. njihovom prisutnošću ili neprisutnošću u fazama osmišljavanja i/ili produkcije ili samo u fazama izlaganja/izvođenja. *Datascape* također prikazuje moguću svestranost osoba koje su ponekad angažirane na različitim vrstama aktivnosti, što također u konačnoj analizi pokazuje važnost nerealiziranih projekata (prikazanih samo sivom fazom „osmišljavanja”). Takva djela nisu osobito dobro istražena u povijesti umjetnosti, za razliku od arhitekture, gdje nerealizirani projekti imaju mnogo veći značaj.

3. Rangiranje suprisutnosti u konačnici ima funkciju *tragova* za ispitivanje mogućih suradnji i može ovdje relativizirati načelo suradnje između umjetnika i inženjera, koje su u svojoj izjavi za E.A.T. zastupali Rauschenberg i Klüver, s obzirom na to da umjetnik također može surađivati s drugim umjetnicima ili čak s nekoliko inženjera istodobno.

Što digitalno čini povijesnumjetničkim praksama?

1. „Biografija” postaje zbroj aktivnosti aktera, a ne samo zbroj umjetnikovih djela (tj. za umjetnika to ne znači samo njegova djela, već i njegovo sudjelovanje u različitim vrstama događaja koje tradicionalni povijesnumjetnički pristupi katkad zanemaruju, kao što su prikupljanje sredstava, sudjelovanja na predavanjima—demonstracijama ili publikacije).

2. Umjetnikovo mjesto nije devalvirano, već je relativizirano. Umjetnik više nije genij koji radi u svojoj kuli bjelokosnoj, već

One of our first intentions was to be able to follow essentially human actors whom we came across many times in the archives, and who had different forms of involvement. We know the importance given to the lives of artists in art history, from Vasari to Gombrich.<sup>27</sup> For our part, we have extended the biographical principle to the works themselves and reversed the order of importance by generating “actor” pages based on different involvements (a mentioned presence at least) in the identified activities’ phases. We have also extended the status of an actor to anyone involved (not only artists), in order to better describe the “networks of cooperation” described in Becker’s *Art Worlds*.

28

Vidi u nastavku „Umnožavanje gledišta na entitete te njihove odnose i trajektorije”.

29

„Umjetnici su određena podgrupa svjetskih sudionika koji, kako se svi slažu, posjeduju poseban dar te time daju jedinstven i nezamjenjiv doprinos određenom djelu, čineći ga tako umjetnošću.”, Becker, *Art worlds*, 35.

30

Zahvaljujemo umjetniku Francku Leiboviciju što je podijelio s nama tu usporedbu prilikom komentiranja stranice Akteri na istraživačkom seminaru koji je organizirala Yaël Kreplak u Muzeju Quai-Branly u travnju 2018. Ovdje se opet čini da je ovaj pristup potvrđen drugim istraživačkim projektom digitalne socijalne povijesti umjetnosti, kao što je MapTap/Cornelia. Brosens, *et al.*, „MapTap and Cornelia. Slow Digital Art History and Formal Art Historical Social Network Research”.

31

Ovo nije jednostavna primjena teorije aktera i mreže na subjekt koji bi bio otporan na nju. Ovo je u skladu s komentarima glavnih aktera organizacije E.A.T. Rauschenberg stoga često govori o kolaboraciji s materijalima, kao i s inženjerima. Također se čini da su neke tehnologije zaista potaknule neke umjetnike na djelovanje (John Cage, „Potrebna nam je, na primjer, potpuno bežična tehnologija” u: *A Year from Monday*).

32

Whitman, „Theatre and Engineering: An Experiment: Notes by a Participant”, 26.

33

Robert Rauschenberg, prema Tomkinsovim citiranjima, *The Bride and the Bachelors: The Heretical Courtship in Modern Art*, 204.



je, realističnije, najvažniji agent unutar mreže.<sup>29</sup> Ta je mreža, nadalje, predstavljena na stranici aktivnosti, kao u obliku filmskih potpisa, dajući priznanje „redatelju”, da se izrazimo kinematografskom metaforom, ali i svim ostalim uključenim osobama koje su pridonijele dizajnu i produkciji djela, koje su ovdje proširene na kretanje i recepciju djela.<sup>30</sup>

3. *Datascape* poziva na razmišljanje u pogledu djelovanja i kao takav „agent” bi mogao opisivati ne samo *ljude* (umjetnik, inženjer, kustos itd.) i organizacije (galerije, muzeji, novine) nego i *stvari*, u ovom slučaju određene tehnologije,<sup>31</sup> koje smo eksperimentalno tek nedavno testirali „bežičnom tehnologijom” (sl. 4) i „infracrvenim TV-om” u slučaju aktivnosti koje su predvodili Robert Rauschenberg ili Steve Paxton. Čini se da komentari samih aktera potvrđuju taj pristup. Sam je Billy Klüver, izvještavajući o preliminarnim sastancima umjetnika i inženjera za performanse *9 Evenings*, rekao da „je nevjerojatna stvar da umjetnici i znanstvenici uopće mogu međusobno razgovarati”. „Prvog sam se sastanka bojao. No onog trenutka kad se počelo govoriti o hardveru, sve je funkcioniralo. To je kao trokut između znanstvenika i umjetnika i hardvera.”<sup>32</sup> I postoji mnogo razloga za vjerovati da se ovaj pristup može proširiti na bilo koju praksu, kao što sugerira Rauschenbergov opis njegove prakse: „Uvijek sam osjećao kao da je, bez obzira na to što sam upotrijebio i učinio, metoda uvijek bila bliža *kolaboraciji* s materijalima nego bilo kojoj vrsti svjesne manipulacije i kontrole.”<sup>33</sup>

As a result, the actor page describes the profile of an actor, accompanied by the artistic and technological tags of the activities in which he is involved, a list of which appears below the name; a timeline of the phases in which he appears, a list ranking the other actors with whom he is most co-present within these phases; and finally, a map of his different places of intervention. Such a page can be interpreted as the view of one node on the greater actor-actor network of collaborations which can be computed from the database. The datascape is an alternative visualization instrument to network analysis. Network visualization represents a system at once reducing individual details to amplify structure effects. The datascape does the opposite, letting the user perceive full details and later discover the structure effects by hyper-textual navigation (or by downloading the network and using a network analysis software). Thus, the complexity is read before the quantification smashes it to extract the “global” effects.<sup>28</sup>

What argument can be made from this visualization?

1. Here again, the complexity of the actor is brought to light thanks to multiple denominations. For example, David Tudor (Fig. 3) no longer appears, as he is usually presented, as a composer and musician but as an artist likely to act outside the strictly musical field (“theater”), for example, using new technologies (“audio systems” and “electrical engineering”).
2. It is also possible to measure an actor’s degree of involvement in E.A.T., by their presence or a lack of it in the conception and/or production phases or in exhibition/performance phases only. The datascape also shows the possible versatility of people, sometimes committed to various kinds of activities, showing too, in the final analysis, the importance of unrealized projects (represented only by a grey “conception” phase). Such works are not particularly well studied in art history as opposed to, say, the field of architecture, where unrealized projects are given much more prominence.
3. The ranking of co-presences finally serves as a *clue* to probe possible collaborations, and may here relativize the principle of collaboration between an artist and an engineer, defended by Rauschenberg and Klüver in their E.A.T. statement, since the artist can also work in collaboration with other artists, or even with several engineers at the same time.

What the digital does to art historian practices?

1. A “biography” becomes the sum of an actor’s activities rather than simply the sum of an artist’s works (i.e. for an artist, this means not only his works but also his participation in different types of events sometimes neglected by traditional history of art approaches, such as fundraising, participation in lecture-demonstrations or publications).

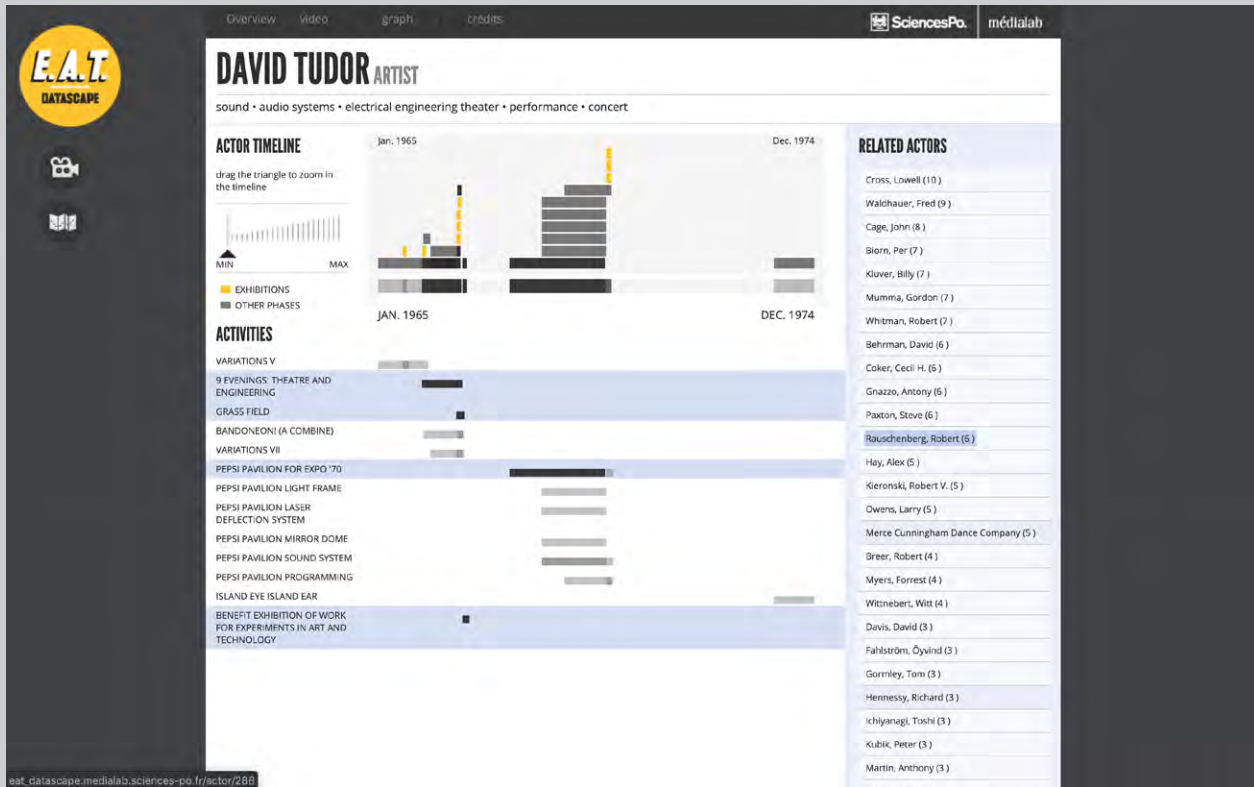
27

Gombrich introduces his art history as follows: “There really is no such thing as Art. There are only artists.” We add “... and works.”

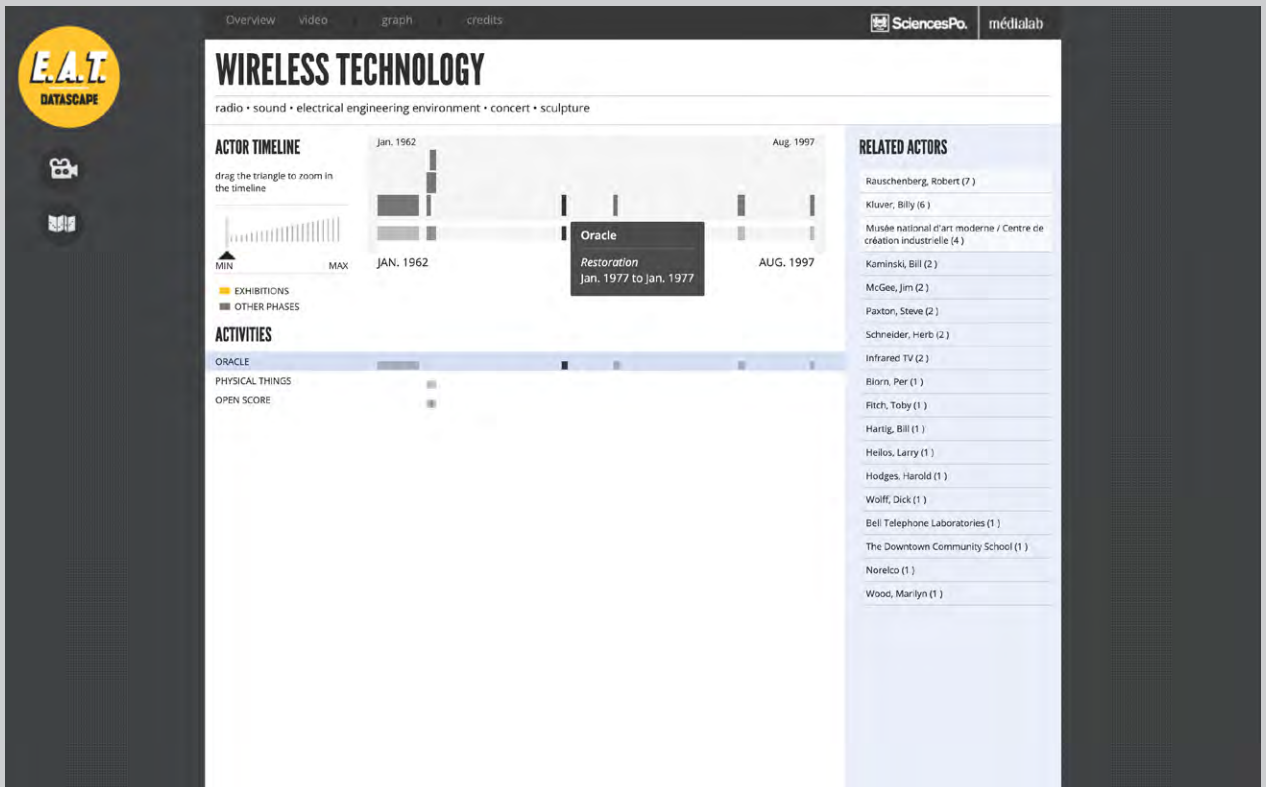
Gombrich, *The Story of Art*, 5.

28

See below “Multiplying points of view on entities and their relations, and trajectories.”



Slika 3.— E.A.T. Datascape. Internetska stranica aktera „David Tudor”. Snimka zaslon. CC BY médialab. Sciences Po, 2019. / Figure 3.— E.A.T. Datascape. Webpage of the actor “David Tudor.” Screenshot. CC BY médialab. Sciences Po, 2019.



Slika 4.— E.A.T. Datascape. Internetska stranica aktera „Bežična tehnologija”. Snimka zaslona. CC BY médialab. Sciences Po, 2019. /  
Figure 4.— E.A.T. Datascape. Webpage of the actor “Wireless Technology.” Screenshot. CC BY médialab. Sciences Po, 2019.

↑

POVEZIVANJE POMNOG, MEZO  
I UDALJENOG ČITANJA

Istraživanje se jednako fokusira na poboljšanje čitljivosti ili razumijevanja organizacije E.A.T. (kao organizacije), kao i na načelo kolaboracije. Stoga se očekuje da pregled pruži određene odgovore na naše pitanje: Što je E.A.T.? Možemo li identificirati poseban „svijet umjetnosti“?

Stranica pregleda (sl. 5) ulaz je u *datascape*. Ali, kao i stranica Akter, ona je samo rezultat prikupljanja digitalnih tragova unesenih na stranice Aktivnosti. Uzimajući temeljne aspekte (vrijeme, prostor, akter) s agregiranim podacima, pregled omogućuje ne samo promatranje *trendova* nego i označavanje poveznica između tih agregiranih podataka te povezanih aktera i aktivnosti. Na taj je način omogućeno artikuliranje pomnih, mezo<sup>34</sup> i udaljenih čitanja,<sup>35</sup> zahvaljujući *reverzibilnoj* hipertekstualnoj navigaciji (višesmjernost).

Koji se argumenti mogu izvući iz te vizualizacije?

1. Nagli porast aktivnosti između 1965. i 1972., koji potvrđuje entuzijazam u pogledu interesa za tehnologiju koji je u konačnici bio kratkotrajan i počeo brzo padati sredinom 1970-ih, ali i perzistencija drugih aktivnosti izravno povezanih s povijesnim akterima koja je uslijedila (realizacija novih kolaborativnih projekata kao što su *Astral Convertible* Trishe Brown, *Local Report* Roberta Whitmana itd. ili izložbi i restauracija nekih od glavnih radova: prethodno spomenuti *Oracle*, ali i *Homage to New York* Jeana Tinguelyja, *Moon Museum* Forresta Myersa itd.).

2. Klasifikacija aktera koji su najviše prisutni u aktivnostima organizacije uključenima u Klüverovu priču o organizaciji E.A.T. Ona stoga nije samo popis umjetnika i inženjera. Nije iznenađujuće da pronalazimo tri od četiri aktivna suosnivača organizacije E.A.T. (Klüver, Rauschenberg, Whitman), ali i „sekundarne“ aktere: umjetnike (David Tudor), inženjere (Per Biorn) i posrednike kao što je Julie Martin, čija je aktivnost manje vidljiva, ali svejedno važna; čak i muzeje (MoMA, Centre Pompidou) i kustose kao što je Pontus Hulten.

3. Rangiranje različitih aktivnosti prema važnosti (dizajnerske aktivnosti očito su najvažnije, osobito zbog nerealiziranih projekata koji uključuju barem tu prvu fazu, ali nakon njih slijede izložbene aktivnosti, zatim aktivnosti produkcije).

4. Geografska distribucija svih aktivnosti organizacije E.A.T. u Sjevernoj Americi, Europi i Aziji s Japanom i Indijom, zahvaljujući sudjelovanju organizacije E.A.T. na svjetskoj izložbi u Osaki 1970. godine i programu razmjene u Indiji.

U konačnici, E.A.T. se pojavio kao nesigurna organizacija koja je okupila aktere različitih profila i čija aktivnost u New Yorku, premda s međunarodnom prisutnošću, pokriva sve polove koji sudjeluju u razvoju „umjetničkog svijeta“, od osmišljavanja i produkcije projekata do izlaganja i publikacije, predavanja i programa razmjene.

2. The artist's place is not devalued but is rather relativized. The artist is no longer a genius working in his ivory tower but, more realistically, the most important agent within a network.<sup>29</sup> This network is presented, moreover, on the activity page, as in the form of film credits—recognizing a “director,” to follow the cinematographic metaphor—but also all the other contributors involved in the design and production of the work, extended here to the circulation and reception of the work.<sup>30</sup>

3. The *datascape* invites thinking in terms of agencies, and as such, an “agent” could describe not only *people* (artist, engineer, curator, etc.) and organizations (galleries, museums, newspapers), but also *things*—here certain technologies,<sup>31</sup> which we have tested on an experimental basis very recently with “wireless technology” (Fig. 4) and “infrared TV” in the case of activities lead by Robert Rauschenberg or Steve Paxton. The comments of the actors themselves seem to validate this approach. Billy Klüver particularly, reporting on the 9 *Evenings* preliminary meetings between artists and engineers, said that “[t]he amazing thing is that it's possible for artists and scientists to talk together at all. The first meeting I was scared. Then, the minute it came down to the hardware it was working. It's like a triangle between the scientists and the artists and the hardware.”<sup>32</sup> And there is every reason to believe that this approach can be extended to any practice, as Rauschenberg's description of his practice suggests: “I have always felt as though, whatever I've used and whatever I've done, the method was always closer to a *collaboration* with materials than to any kind of conscious manipulation and control.”<sup>33</sup>

<sup>34</sup>

Ta „mezo” razina ne odgovara strogo stranici Akter, pokraj stranice Aktivnost koja bi se bavila pomnim čitanjem i stranice Pregled koja bi se bavila udaljenim čitanjem. Stranica aktivnosti, premda je ovdje povezana „pomnim čitanjem” zbog pristupa bilješkama (izvorima slika i tekstova), također omogućuje „mezo” čitanje s, na primjer, vremenskom crtom događaja. Mezorazina je stoga upravo ono što omogućuje svladavanje suprotnosti između djela i konteksta.

<sup>35</sup>

To često nedostaje u projektima digitalne povijesti umjetnosti (engl. *Digital Art History*, DAH) koji se zadovoljavaju statističkim pristupom bez omogućivanja pristupa izvorima. U ovom slučaju predlažemo razlikovanje digitalne *sociologije umjetnosti* (engl. *Digital Sociology of Art*, DSA) od digitalne *socijalne povijesti umjetnosti*.

<sup>36</sup>

Fletcher, „Reflections on Digital Art History”.

U tom pogledu, i zahvaljujući mogućnosti kretanja između različitih mrežnih stranica, te u ovom specifičnom slučaju između stranice pregleda i stranice aktera posvećene umjetniku Robertu Rauschenbergu (sl. 6), možemo pretpostaviti da je Rauschenbergov izlazak iz organizacije 1970. godine, za razliku od trojice ostalih suosnivača, iznimno utjecao na budućnost organizacije E.A.T.

Što digitalno čini povijesnoumjetničkim praksama?

Kao što je Pamela Fletcher predvidjela 2015. godine u svojem eseju „Reflections on Digital Art History”:

sposobnost računala da analiziraju velike količine podataka mijenja vremenske i geografske razmjere u kojima se može odvijati povijesnoumjetničko istraživanje, preusmjeravajući pozornost na veće i duže obrasce u praksi i recepciji. Za neke će znanstvenike ti veći trendovi biti njihov glavni predmet istraživanja, dok će za druge oni biti obogaćen kontekst, „signal” u odnosu na koji „buka” iznimnoga jedinstvenog primjera postaje značajnija. U svakom slučaju, promjene mogućnosti između udaljenog i pomnog čitanja trebale bi potaknuti metodološku refleksiju o značenju „konteksta” i specifičnih obrisa odnosa između pojedinih ljudi i objekata, kao i većih povijesnih obrazaca.<sup>36</sup>

29

“Artists are some subgroup of the world’s participants who, by common agreement, possess a special gift, therefore make a unique and indispensable contribution to the work, and thereby make it art.” Becker, *Art worlds*, 35.

30

We are thankful to the artist Franck Leibovici for sharing this comparison with us, when commenting the Actor page at a research seminar organized by Yaël Kreplak at the Musée du Quai-Branly, April 2018. Here again, this approach seems to be confirmed by other digital social history of art research projects, such as MapTap/Cornelia Brosens *et al.*, “MapTap and Cornelia. Slow Digital Art History and Formal Art Historical Social Network Research.”

31

This is not a simple application of an actor–network theory to a subject that would be refractory to it. This is consistent with the comments of the main E.A.T. actors. Rauschenberg thus frequently talks about collaboration with materials, as well as with engineers. It also appears that some technologies have really made some artists act (John Cage, “We need for instance an utterly wireless technology” in *A Year from Monday*).

32

Whitman, “Theatre and Engineering: An Experiment: Notes by a Participant,” 26.

33

Robert Rauschenberg, quoted by Tomkins, *The Bride and the Bachelors: The Heretical Courtship in Modern Art*, 204.

34

This “meso” level does not strictly correspond to the “actor” page, next to an “activity” page that would deal with close reading, and an overview page with distant reading. The activity page, though associated here with “close reading” because of the access to annotations (image and text sources), is also providing a “meso” reading with, for instance, the timeline of events. The meso level is therefore precisely what makes it possible to overcome the opposition between work and context.

35

This is often lacking in Digital Art History (DAH) projects that are satisfied with a statistical approach without allowing access to sources. In this case, we would suggest distinguishing digital *sociology of art* (DSA) from digital *social history of art*.

## ASSOCIATING CLOSE, MESO AND DISTANT READING

The inquiry focuses as much on improving the readability or an understanding of the E.A.T. (as an organization) as it does on its principle of collaboration. It is to be expected, therefore, that the overview provides some answers to our questions: What is E.A.T.? Can we identify a specific “art world?”

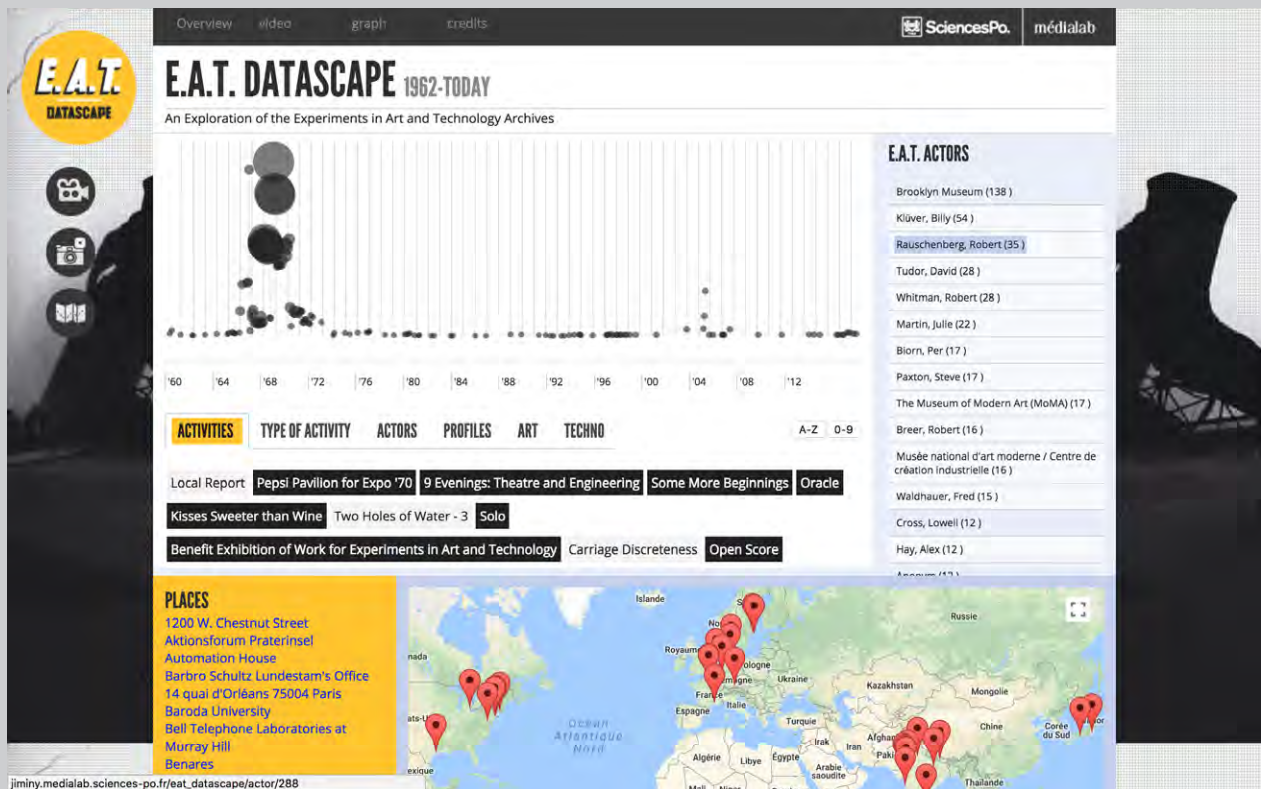
The overview page (Fig. 5) is the entry in the datascape. But like the Actor page, this one is only the result of compiling the digital traces entered in the Activities pages. Taking the fundamental facets (time, space, actor), with aggregated data, the overview makes it possible not only to observe *trends* but also to highlight the links between this aggregated data and the related actors and activities. It thus makes it possible to articulate close, meso<sup>34</sup> and distant readings,<sup>35</sup> thanks to *reversible* hypertextual navigation (multidirectionality).

What arguments can be made from this visualization?

1. A sudden peak in activity between 1965 and 1972, which confirms an effervescence that was ultimately short-lived, with interest in technology declining quickly in the mid-1970s, but also the persistence thereafter of other activities directly linked to the historical actors (realization of new collaborative projects such as *Astral Convertible* by Trisha Brown, *Local Report* by Robert Whitman, etc., or exhibitions and restorations of some of the main works: *Oracle* mentioned above, but also *Homage to New York* by Jean Tinguely, *Moon Museum* by Forrest Myers, etc.);
2. A classification of the actors most present within the activities of the organization included in Klüver’s story of E.A.T. It is therefore not just a list of artists and engineers. Not surprisingly, we find three of the four active co-founders of E.A.T. (Klüver, Rauschenberg, Whitman), but also “secondary” actors: artists (David Tudor), engineers (Per Biorn), and mediators such as Julie Martin, who have less visible but important activity nonetheless; even museums (MoMA, Centre Pompidou) and curators like Pontus Hulten;
3. A ranking of the multiple activities in order of importance (design activities are obviously the most important, particularly because of the unrealized projects that include at least this first phase, but these are followed by exhibition activities, then production activities);
4. A geographical distribution of E.A.T.’s overall activities in North America, Europe and Asia—with Japan and India, due to E.A.T.’s participation in the Osaka World’s Fair in 1970, and the residency program in India.

Ultimately, E.A.T. emerges as a precarious organization that brought together actors with diverse profiles, and whose activity in New York, albeit with an international presence, covers all the poles that participate in the

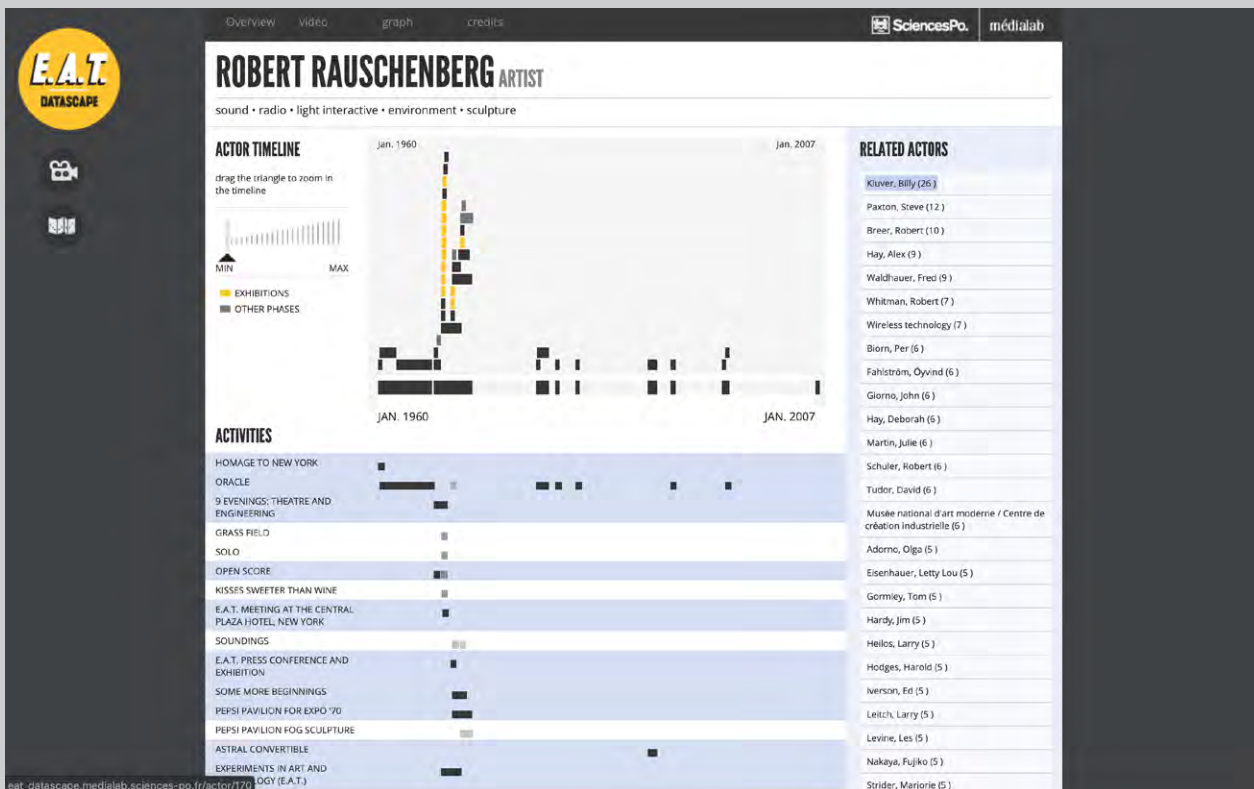




Slika 5.— E.A.T. Datascape. Stranica pregleda. 2011.–2019. Slika zaslon. CC BY médialab. Sciences Po, 2019.

/ Figure 5.— E.A.T. Datascape. Overview Webpage. 2011–2019. Screenshot. CC BY médialab. Sciences Po, 2019.





Upravo je razumijevanje pojma konteksta u pitanju. U našem slučaju, suprotnost između djela i procesa ili djela i konteksta zamjenjuje se opisom niza *situacija*—postupaka koji se odvijaju na određenom mjestu i u određenom vremenu s jednim ili više agenata. Drugim riječima, više nije pitanje smještanja djela u njegov kontekst (koji se smatra okolinom koja objašnjava djelo), već, opet, *integriranja konteksta u djelo* i time očuvanja „bogatstva asocijacija, pritom ostajući vjeran složenosti agenata”.

UMNOŽAVANJE GLEDIŠTA  
NA ENTITETE TE NJIHOVE ODOSE  
I TRAJEKTORIJE

Istraživanje, koje se sastoji od kretanja kroz tragove i više-struke trajektorije ili itinerare koji potiču određena slučajna otkrića, osnovno je obilježje *datascapae*, zamišljenog kao instrument za istraživanje koji može pomoći povjesničarima umjetnosti u testiranju hipoteza, odgovaranju na pitanja i otkrivanju novih pitanja.

Kao što smo upravo vidjeli, omogućuje kretanje između različitih razina agregacija, ali i između dva pregleda istih entiteta koji su različito raspoređeni, kao u primjeru mrežne vizualizacije, u obliku grafikona svih aktera, omogućenih primjenom softvera Gephi (sl. 7) koji nam pomaže da bolje promotrimo više odnosa između agenata (kao alternativa popisu na stranici pregleda):

Kada se krećemo po zaslonu, povećavamo i smanjujemo, mijenjamo pravila projekcije, združujemo i raščlanjujemo prema različitim varijablama, ono što se ističe jest ono što ostaje konstantno tijekom pomicanja točki gledišta. To je naša „cjelina”. Kao što je bilo i za očekivati, njezina se veličina znatno smanjila! Umjesto da je struktura složenija od svojih pojedinih komponenti, postala je jednostavniji skup atributa čija se unutarnja kompozicija stalno mijenja. Cjelina je sada mnogo manja od zbroja svojih dijelova. Biti dio cjeline više ne znači „ulaziti” u viši entitet ili „pokoriti se” otpremniku (neovisno o tome je li otpremnik korporativno tijelo, društvo *sui generis* ili nova struktura), već za bilo koju monadu to znači posuditi dio sebe drugim monadama a da nijedna od njih ne izgubi svoj višestruki identitet.<sup>37</sup>

Ukratko, *multiperspektivizam*, *višesmjernost* i *višedimenzionalnost*<sup>38</sup> tri su međusobno povezana pojma i, opet, način propitivanja samog pojma konteksta.

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development of an “art world,” from the conception and production of projects to exhibition and publication, lectures and residency programs.

In this respect, and thanks to this possibility of circulating between the different web pages, and in this specific case between the overview page and the actor page dedicated to the artist Robert Rauschenberg (Fig. 6), we can assume that Rauschenberg’s withdrawal from the organization in 1970—contrary to the three other co-founders—severely affected the future of E.A.T.

What the digital does to art historian practices:  
As Pamela Fletcher foresaw in 2015, in her essay “Reflections on Digital Art History:”

the ability of computers to analyze large data alters the temporal and geographic scales at which art-historical inquiry can take place, shifting attention to larger and longer patterns in practice and reception. For some scholars these larger trends will be their primary subject, but for others they will be an enriched context, the “signal” against which the “noise” of the exceptional singular example becomes more meaningful. In either case, the shifts in possibilities between distant and close reading should prompt methodological reflection on the meaning of “context” and the specific contours of the relationships between individual people and objects, as well as larger historical patterns.<sup>36</sup>

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Latour, *et al.*, „The Whole Is Always Smaller than Its Parts”—a Digital Test of Gabriel Tarde’s Monads”, 607.

38

Vidi Drucker, „Humanities Approaches to Graphical Display”. Iako ne spominje pojam monade, ono što predlaže nevjerojatno je povezano s prethodnom referencijom („The Whole Is Always Smaller than Its Parts”): „Sustavi gledišta uvedeni u grafikone i tablice učinit će perspektivni položaj očitim s obzirom na njihove informacije, unutarnje gledište u grafičkom prikazu prostora. To vrijedi za sve kartografske projekcije. Svaka karta u svojem koordinatnom sustavu za grafički izraz sadržava skup pretpostavki o mjestu iz kojeg je karta izvučena. Informacijski prostori izvučeni s gledišta, umjesto kao da su neovisni o promatraču, ponovno umeću subjektivno gledište svojeg stvaranja u grafički izraz. Konačno, pretpostavlja se da svaka točka ili oznaka koja se upotrebljava kao specifično čvorište na humanističkom grafu ima mnogo dimenzija—svaka od njih komplicira njezin identitet sugerirajući ugrađenost njezina postojanja u sustav međusobno ovisnih odnosa. Stoga se informacijski entiteti ili jedinice shvaćaju kao izmišljene apstrakcije koje služe određenoj svrsi. No njihov potencijal da ih se iznova čita u odnosu na bilo koji broj drugih jednako važnih odnosa može se učiniti vidljivim. Ovaj pristup uništava temelje na kojima se upotrebljava standardna metrika za apstrahiranje kvantitativnih informacija iz ljudskih okolnosti. Humanističke premise zamjenjuju pojmove statističkih koncepata samoidentiteta isprepletenom međuovisnošću i kontingencijom.”

Indeed, it is the very understanding of the notion of context that is at stake. In our case, the opposition between work and process, or work and context is replaced by a description of a series of *situations*—actions that take place in a specific place and time with one or more agents. In other words, it is no longer a question of placing the work in its context (thought as an environment which explains the work) but, again, of *integrating the context into the work*, and, by doing so, preserving “the richness of associations while remaining faithful to the complexity of agents.”

MULTIPLYING POINTS OF VIEW  
ON ENTITIES AND THEIR RELATIONS,  
AND TRAJECTORIES

Exploration, which consists of circulation through the traces, and multiple trajectories or itineraries that promote certain serendipity, is an essential characteristic of the datascape, conceived as a research instrument which can help the art historian test hypotheses, answer questions and discover new issues.

It allows, as we have just seen, the circulation between different levels of aggregation, but also between two views of the same entities rearranged differently, as in the network visualization example, in the form of a graph of all actors, provided by the use of Gephi software, (Fig. 7) which helps us better observe multiple relationships between agents (as an alternative to the list provided in the overview page):

When we navigate on a screen, zooming in and out, changing the projection rules, aggregating and disaggregating according to different variables, what stands out is what remains constant through the shifting of viewpoints. This is our “whole.” As expected, its size has shrunk considerably! Instead of being a structure more complex than its individual components, it has become a simpler set of attributes whose inner composition is constantly changing. The whole is now much smaller than the sum of its parts. To be part of a whole is no longer to “enter into” a higher entity or to “obey” a dispatcher (no matter if this dispatcher is a corporate body, a *sui generis* society, or an emergent structure), but for any given monad it is to lend part of itself to other monads without either of them losing their multiple identities.<sup>37</sup>

To sum up, *multiperspectivism*, *multidirectionality* and *multidimensionality*<sup>38</sup> are three interlinked notions, and a way, here again, to question the very notion of context.

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Fletcher, “Reflections on Digital Art History.”

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Latour *et al.*, “‘The Whole Is Always Smaller than Its Parts’ — a Digital Test of Gabriel Tarde’s ‘Monads,’” 607.

38

See: Drucker, “Humanities Approaches to Graphical Display.”

Though not referring to the notion of monad, what she proposes is strikingly coherent with the previous reference (“‘The Whole Is Always Smaller than Its Parts’”): “Point of view systems introduced into graphs and charts will make evident a perspectival position with respect to their information, an inner standing point in the graphical rendering of space. This is true of all cartographic projections. Every map contains within its coordinate system for graphical expression, a set of assumptions about the place from which the map is drawn. Information spaces drawn from a point of view, rather than as if they were observer independent, reinsert the subjective standpoint of their creation into the graphical expression. Finally, any point or mark used as a specific node in a humanistic graph is assumed to have many dimensions to it—each of which complicates its identity by suggesting the embedded-ness of its existence in a system of co-dependent relations. Information entities, or units, are thus understood as fictional abstractions serving a purpose. But their potential to be read again in relation to any number of other equally significant relations can be made evident. This approach destroys the ground on which standard metrics are used to abstract quantitative information from human circumstances. Humanistic premises replace notions of statistical concepts of self-identity with entangled co-dependence and contingencies.”

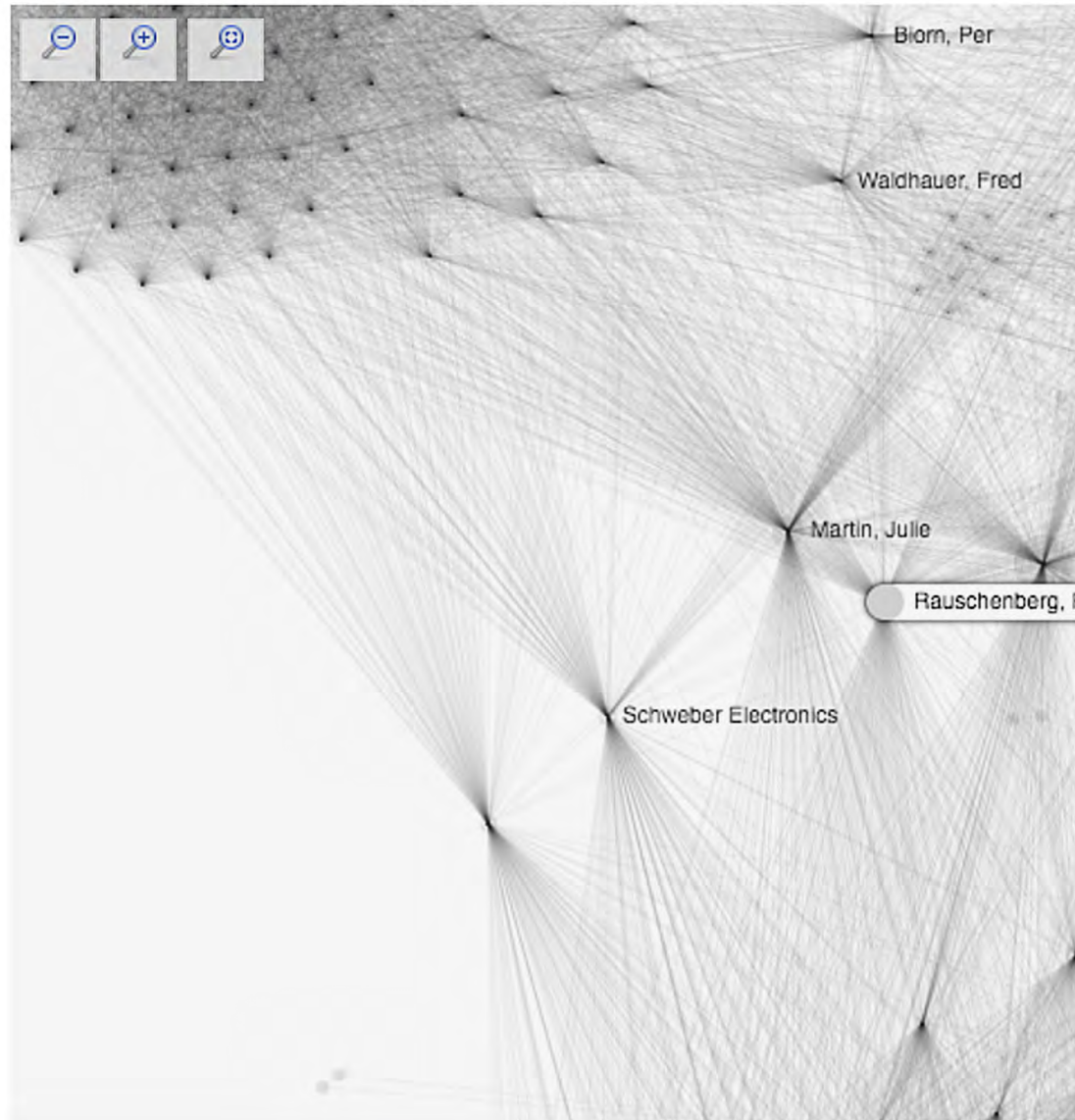




# NETWORK OF ACTORS

a graph visualization

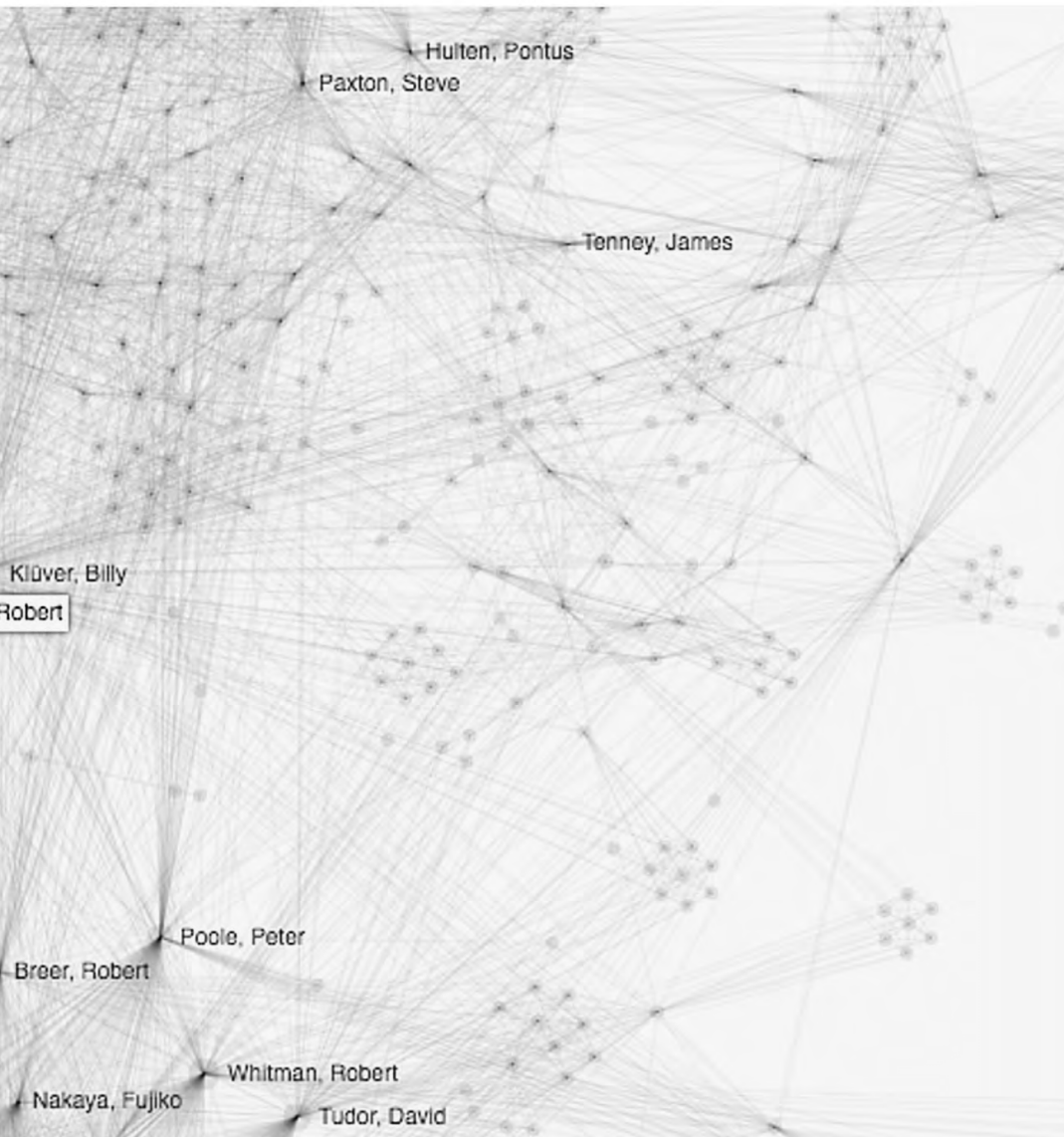
A visualisation of the network of actors rendered in Gephi, network analysis software. The network shows connections between actors in the organisation, e.g. Billy Klüver, Robert Rauschenberg, Julie Martin, F...







software. Measuring 'betweenness centrality' allows the viewer to focus on key actors like Robert Whitman, etc.



ZAKLJUČAK :  
IZVAN KONTEKSTA PREMA  
REALNIJEM OPISU ISPREPLETENIH  
TRAJEKTORIJA

CONCLUSION :  
BEYOND CONTEXT AND  
TOWARDS A MORE REALISTIC DESCRIPTION  
OF ENTANGLED TRAJECTORIES

Složenost organizacije E.A.T. i bogatstvo njezine arhive čine je tipičnim primjerom socijalne povijesti umjetnosti za digitalnu humanistiku.

The complexity of E.A.T. and the richness of its archives make it a textbook case of social history of art for the digital humanities.

Istraživanje različitih grafičkih sučelja E.A.T. datascapea omogućuje vizualiziranje onoga što se inače ne bi moglo vidjeti tako jasno u pogledu socijalne povijesti njegova subjekta: očuvanjem tragova, prikazom procesa osmišljavanja i produkcije djela ili projekta i njegovih različitih oblika postojanja u istoj ravnini (radi razmatranja sukcesije i *simultanosti*), povezivanjem pomnih, mezo i udaljenih čitanja, umnožavanjem trajektorija (višesmjernost) i gledišta na iste entitete (multiperspektivizam) kako bi se poboljšala njihova višedimenzionalnost, postaje moguće prikazati i kretati se kroz određenu složenost agenata, njihovih djela i same organizacije.

The exploration of the various graphical interfaces of the E.A.T. datascape makes it possible to visualize what could not otherwise be seen so clearly in terms of its subject's social history: by preserving the traces, by representing on the same plane the process of conception and production of a work or a project and its different modes of existence (to consider succession *and* simultaneity), by associating close, meso and distant readings, by multiplying the trajectories (multi-directionality) and points of view on the same entities (multiperspectivism) to enhance their multidimensionality, it becomes possible to represent and navigate through a certain complexity of agents, their works and the organization itself.

No, s druge strane, samu socijalnu povijest umjetnosti mijenja digitalni instrument koji se upotrebljava. *Digitalna socijalna povijest umjetnosti* o kojoj ovdje govorimo nalazi se na sjecištu socijalne teorije i povijesti, sociologije i antropologije umjetnosti. Kao što smo vidjeli, cilj je, dakle, iz perspektive ovog estetskog istraživanja geneze kolaborativnog djela, iz povijesnumjetničkih dokumenata slijediti „asocijacije između heterogenih elemenata” i, konkretnije u ovome slučaju, „mreže suradnje”, od osmišljavanja do produkcije i širenja, s pristupom usmjerenim na djelovanje i naglaskom na životni ciklus ili biografiju aktera ili aktivnosti.

But in return, the social history of art itself is modified by the digital instrument used. *The digital social history of art* we refer to here is at the crossroads of social theory and the history, sociology and anthropology of art. As we have seen, the aim is therefore, in the perspective of this aesthetic investigation into the genesis of collaborative work, to trace from art historical documents the “associations between heterogeneous elements,” and more specifically here, the “networks of cooperation” from conception, to production and dissemination, with an action-centered approach and an emphasis on the life cycle or biography of actors or activities.

Izvan našeg konkretnog slučaja ova digitalna socijalna povijest umjetnosti omogućuje analiziranje složenih, interdisciplinarnih projekata kojih je sve više u svijetu suvremene umjetnosti:

- radi analiziranja različitih oblika postojanja djela i odnosa između tih različitih oblika ili „oblika života”<sup>39</sup>
- radi širenja statusa aktera ili agenta ne samo na ljude nego i na određene *stvari*, kako bi se što bolje opisalo njihovo djelovanje te razumjeli radovi i aktivnosti koje se provode u suradnji
- radi integriranja konteksta u djelo (izvan neproduktivnog suprotstavljanja djela i njegova konteksta, koje se očituje u tradicionalnom razlikovanju disciplina povijesti umjetnosti s jedne strane i sociologije umjetnosti s druge)
- radi jačanja koncepcije umjetničkog djela kao kontinuuuma djelovanja ili situacija sastavljenih od mogućih isprepletenih sljedova ili premreženih trajektorija, od kojih nas svaka na svoj način informira o svojstvima djela i njegovim različitim oblicima postojanja.

<sup>39</sup>

Leibovici, *Des Formes de Vie*.



Naposljetku, ova digitalna metoda omogućuje kombiniranje pristupa u povijesti umjetnosti i sociologiji umjetnosti putem antropološkog pristupa usmjerenog na djelovanje i opisivanje djela kao sačinjenoga presijecanjem heterogenih trajektorija, a ne kao objekta u kontekstu koji bi u protivnom bio samo njegovo „okruženje“.

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Beyond our particular case, this digital social history of art makes it possible to study complex, interdisciplinary projects that are multiplying in the contemporary art world:

- to study the different modes of existence of a work and the relations between these different modes or “life forms;”<sup>39</sup>
- to extend the status of an actor or an agent not only to people but also to certain *things*, in order to better describe their agencies, and understand works and activities carried out in collaboration;
- to integrate the context into the work (beyond the unproductive opposition between work and its context, which is reflected in the traditional distinction between the disciplines of history of art on the one hand and sociology of art on the other).
- to strengthen a conception of a work of art as a continuum of agencies or situations, composed of possible intertwined sequences or entangled trajectories, each of which informs us in its own way about the properties of the work and its different modes of existence.

In the end, this digital method makes it possible to combine approaches in history of art and sociology of art, by means of an anthropological action-centered approach, and by describing the work as constituted by the intersection of heterogeneous trajectories—rather than as an object within a context that would otherwise be merely its “environment.”

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