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BIO - CREATION AND PEACE
PROCEEDINGS

Edited by
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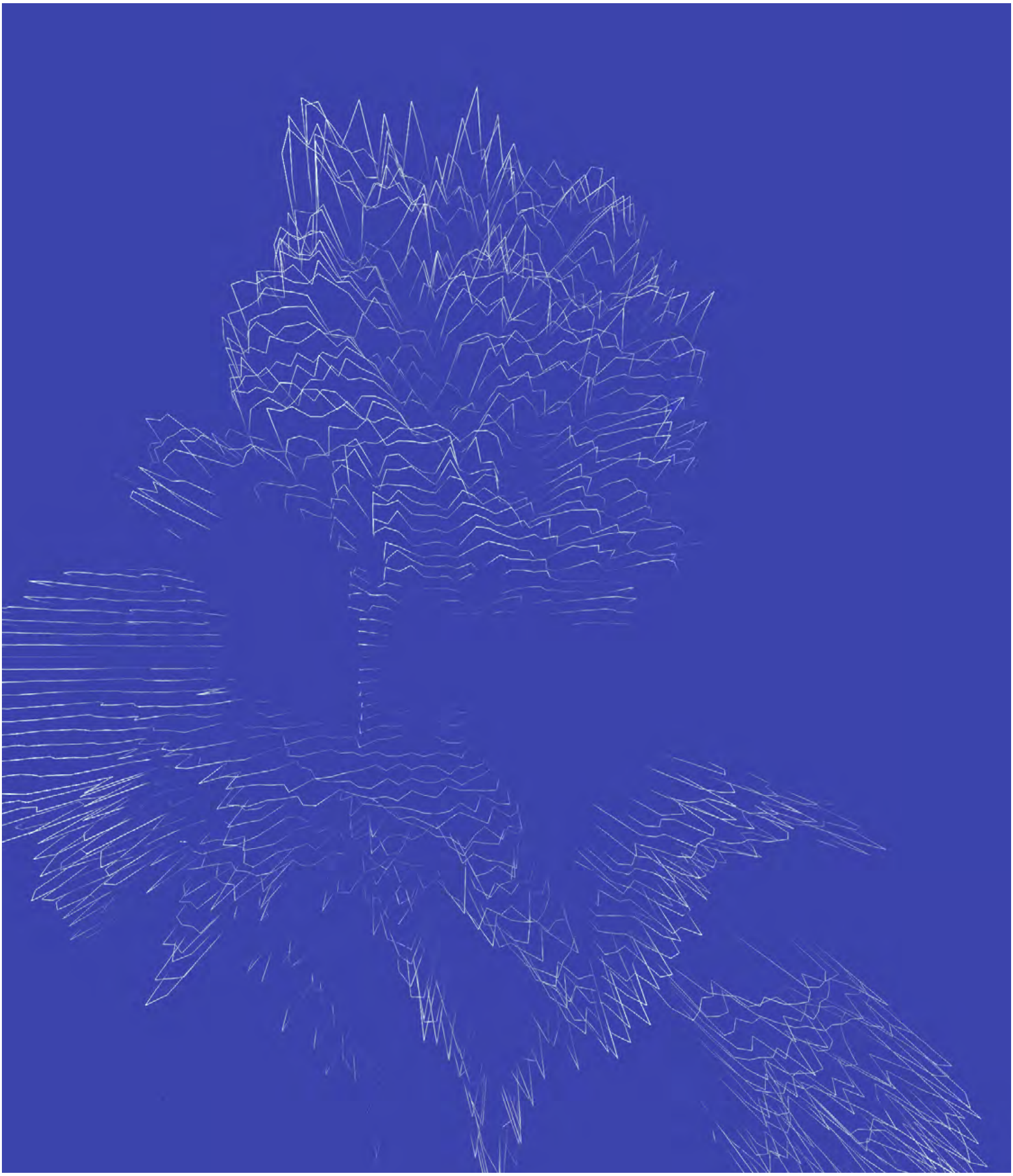

ISEA2017 Manizales BIO-CREATION AND PEACE

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Presentation

In behalf of the University of Caldas, partner institutions, and organizing committee, we are glad to present the ISEA2017 proceedings. The 23rd International Symposium on Electronic Arts was held jointly with the 16th International Image Festival in Manizales, Colombia. The University of Caldas has organized the Festival for twenty years and we are proud to organize this year the Symposium. Additionally, 2017 is the France-Colombia year and the event had a significant participation of French artists and authors.

Planning the event has been an exciting, we believe that the conversation between the ISEA community and Latin-American artists and designers will be heightened from this year. The event consisted of two days of workshops and tutorials and five days of academic presentations, keynotes, artistic exhibitions and talks, and other special events. In the first day of workshops, the Leonardo 50th anniversary celebration kick-off was held, which was a space to foresee the next fifty years of transdisciplinary collaborative explorations in art, science, and technology.

This proceedings book is the collection of accepted papers, posters, panels and roundtables that describe current creative research in electronic art, design, science, and technology. We thank the academic chairs Andrés Burbano and Julián Jaramillo for their tireless and persistent work, the authors, and the IPC members. We also thank Cristina Sabogal, Mónica Arango, Paula López, Camila Hurtado, Mariana Valencia, and the members of the organizing committee and volunteers that made possible the academic program.

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Felipe C. Londoño, Director ISEA2017
G. Mauricio Mejía, Deputy director ISEA2017

Preface

This Proceedings presents the results of the Academic Call of ISEA2017, which received 151 submissions for papers, panels, posters and roundtables by 260 authors from 4 continents. All the submitted works were reviewed by at least two members of the International Program Committee (IPC), through a double-blind evaluation process that achieved 295 reviews. There is an expressive representation of 120 Latin-American researchers, 60 of which come from Colombia, 27 from Brazil, 21 from Mexico and others who come from countries such as Argentina, Chile, Costa Rica, Ecuador, Peru, and Uruguay. It draws a complete picture of the activities concerning arts and technology in the region that, we hope, will have a substantial impact.

The Academic Call proposed an intellectual and creative engagement with unusual fields in the framework of the negotiations between the arts and the technologies that have characterized previous venues in the area. The two main conceptual tracks of ISEA2017 are Bio Creation and Peace, and they are divided into six sub-themes: “Bio Creation and Data,” “The Cultural Dimensions of Bio-creation and Peace,” “Interdisciplinary Platforms for Coexistence,” “Critical Perspectives on the Use of Technology for Peace,” “Media Art, Landscape, and Heritage,” and “Design, Art, Science, and Technology”.

The inclusion of novel topics in the academic symposium unveils the breadth of the area, which shows that such thematic expansion is necessary to accommodate and translate the needs and interests of the Colombian society within the core of the Post-Globalization landscape in which we live today. In times challenged by unanticipated turns of events, when “alternative-facts” and “post-truth” media negate the conceptual world-views of people, when structures of power deny environmental changes, and when old and new conflicts arise as leitmotivs of human civilization, there is clear need for a profound exploration of this two notions: Bio Creation and Peace. Academic and artistic events such as the International Symposium on Electronic Arts should seriously assume the reflection and action on these fields exploring the implications for our local and global societies.

The reflection around Bio Creation can thoughtfully articulate the questions about biology, computation, nature, and ecology as an integral part of contemporary endeavors in the arts and technology. This is a task that could be done paying attention to the recent theoretical reflections; for instance, to the Green Studies debate led by intellectuals such as Jens Hauser or pointing to the ethical remarks related to the bio media discussed in Joanna Zylinska´s work. The other main component, the reflection around Peace is crucial for our socio-cultural context. As the reader probably knows, there is an unprecedented Peace process happening in Colombia that is attempting to solve a struggle that has upset Colombian society for more than a half of a Century. This process that is well advanced has had a meaningful impact on the current Colombian political configuration; however, it still needs substantial elaboration to contribute to the construction of a post-conflict society. This condition is one of the reasons why is vital that the next ISEA will be hosted in Durban, South Africa, nation that is a permanent reference.

The selection of papers and presentations of the Academic Track offers an extraordinary variety of proposals articulating the thematic concepts proposed with a battery of classical questions that are part of the foundations of the questions addressed in ISEA since its inception; for instance, the importance of technological media, the role of digital technologies, the value of data, and the significance interactive processes.

Before closing we would like to thank the IPC members for their valuable help reviewing the proposals, many thanks to the people who applied, thanks to the ones who came to Manizales. We present in front of you, our gratitude and respect for your work and contribution.

Andrés Burbano & Julián Jaramillo Arango
ISEA2017 Academic Chairs

SUB-THEMES

Bio creation & Data

Data is becoming pervasive in our daily lives. Scientists have used data and biological processes to create products and systems, while artists explore the aesthetics of technology, data and biology. How do artists integrate data and biological phenomenon in the creative process? In what ways do designers take advantage of large amounts of data to make decisions that affect sustainability and biodiversity?

Critical perspectives on the use of Technology for Peace

Technology is a potential tool that supports peace process and conflict resolution. What is the role of art and design in defining the use of technology to support peace and conflict resolution? Are there cultural identity tensions catalyzed by technologies? How can technology promote intercultural dialogues and peace construction?

Media Art, Landscape and Heritage

ISEA2017 will take place in a region in Colombia known as the Coffee Cultural Landscape, declared as a world heritage site by UNESCO. We invite work that reflects on the conflict between media and heritage. How do artists and designers include heritage in their critical thinking and aesthetic decisions? How could media art help disseminate cultural values around peace? Does media art have the capacity to preserve heritage? Does conservation or cultural transformation generate conflict?

Interdisciplinary Platforms for Coexistence

Transdisciplinary teams collaborate to generate social and political content and debates. Artists, designers and scientists have tried to work together and get citizens involved with interactive technologies and media. Are these platforms showing paths for social coexistence? How transdisciplinary collaborations can generate social benefits? How can biological process be used as source of inspiration and the generation of social possibilities for living in peace?

The Cultural Dimensions of Bio-creation and Peace

In recent times, pockets of peace across our planet have emerged and Colombia is one example. Does the idea of peace have a larger role to play than simply resolving conflict? In what ways could indigenous awareness contribute to our understanding of peace? What bridges in thought and action are needed to achieve global peace across cultural and transdisciplinary boundaries? Is bio-creation in conflict with, or in accord with, indigenous awareness of living organisms?

Design, Art, Science, and Technology

This subtheme is to open up participation for other authors that want to submit works to ISEA2017 and include a broad interdisciplinary discussion and showcase about interrelations among design, art, science and technology.

Felipe C. Londoño, Director ISEA2017
G. Mauricio Mejía, Deputy director ISEA2017

Contents

Presentation 5

Preface 7

SUB-THEMES 9

The Cultural Dimensions of Bio-creation and Peace 19

Fostering Care and Peaceful Multispecies Coexistence with Agential Provotypes, **Raune Frankjaer** 21

Mental Maps of Traditional Fishermen in the Caribbean Sea, **Fabian Leotteau** 29

Applying Interaction design for building mediated experiences by Technology to Foster the Ancestral Culture of Colombia. Case: Kosmos Astronomical Museum, **Clara Isabel Pantoja Muñoz, Carlos H. Sánchez Benavides, Carolina Ledesma, Andrés Felipe Gallego Aguilar** 39

Urban Mesh: Exploring Data, Biological Processes and Immersion in the Salmon People, **Prophecy Sun, Kristin Carlson, Jim Bizzocchi, Thecla Schiphorst** 47

Interdisciplinar Platforms for Coexistence 57

Art and Interaction: Language and Meaning Production, **Fernando Fogliano** *59*

Representing Peace in Colombia through Interactive and Transmedia Non-Fiction Narrative, **Arnau Gifreu-Castells** 68

Cognitive Beings: Brain Mechanisms Discussed in Cultural Studies, **Su Hyun Nam** *75*

The Aesthetic Experience of Augmented Reality Art, **Meng Qu** *79*

Prototyping Puppets Beyond Borders, **Isabel Restrepo, Michael Nitsche, Crystal Eng** 87

Hackitectures.Reordering Physical Spaces, Electronic Flows and Social Bodies. ISEA2017, **Laura Rodríguez Moscatel** 95

Domains, Publics and Access. A Wiki in Progress on Access Archaeology, **Paz Sastre Domínguez** 102

Augmentations Across Virtual and Physical Topologies: Mixed Reality Re-assembled, **Rewa Wright** 112

Bio-creation & Data 121

TURBA Concert in 15 Movements for 64 Neural Xoscillators, **Patxi Araujo** 123

Reimaging Coral Reefs: Remodelling Biological Data in the Design Process, **Caitilin de Bérigny, Dagmar Reinhardt, Nathaniel Fay** 128

Data won't change your behavior: A critical design exploration of Quantified Self technologies, **Eva Durall, Teemu Leinonen**.....136

Mechanisms of Listening and Spatial Mental Imagery, **Luca Forcucci**.....143

Prolegomena for a Transdisciplinary Investigation into the Materialities of Soft Systems, **Jonas Jørgensen**.....153

The Sound of Decentralization – Sonifying Computational Intelligence in Sharing Economies, **Marinos Koutsomichalis, Evangelos Pournaras**.....161

Visualising the Meditating Mind: The Aesthetics of Brainwawe Data, **Lian Loke, Caitilin de Bérigny, Youngdong Kim, Claudia Núñez Pacheco, Karen Cochrane**.....171

Bag-Bug: Adaptive Horizontal Transfers, **Dr. Clarissa Ribeiro**.....181

Hello, World. The Artist's Palette Using New Media among Atoms, Bits, and Connectivity, **Andrea Sosa**.....187

Fluid Processor Design for Ecological Computing- a new Techno-Ecological Computing Paradigm for Sustainability, **Stahl Stenslie**.....196

Critical Perspectives on the Use of Technology for Peace.....203

Image Manipulation Practices Through the History and Evolution of Photography, **Rafael Ángel Bravo**.....205

Video Art, Artivism and Photography as Tools for Subvertising the Patriarchal Indoctrination of Advertising, **Alejandra Bueno de Santiago**.....211

POETIC INSTINCT – Aesthetic Experience as a Vital Function, **Barbara Castro, Doris Kosminsky**.....221

Transmedia as a Tool for the Reconstruction of Collective Memory in Post Conflict Scenarios in Colombia, **Alba Lucía Cruz Castillo, Jesús Alejandro Guzmán Ramírez**.....229

The Sagamine Satoyama Plan, **Haruo Ishii**.....238

Open Estudio: Mapping Intercultural Dialogues through Art and Technology, **Isabel C. Restrepo, Esteban García Bravo, Pablo A. Pulgarín, Carlos M. Sánchez**.....247

Vis. [Un]Necessary force A Socially Engaged Creative Practice Research Project, **Dr. Luz María Sánchez Cardona**.....255

SOPRO (The Blow), **Milton Terumitsu Sogabe, Fernando Fogliano, Fabio Oliveira Nunes, Soraya Braz, Carolina Peres, Cleber Gazana (cAt team)**.....262

Designing for Bottom-Up Adaptation to Extreme Heat, **Jennifer Weiler, Stacey Kuznetsov, Piyum Fernando, Emily Ritter, Nathaniel Jack Greene, Priyanka Parekh**.....267

Media Art, Landscape and Heritage.....277

Curating/Containing: Exhibiting Digital Art about Mental Health, **Vanessa Bartlett and Lizzie Muller**.....279

Eastern Cultural Heritage, Digital Remediation and Global Perspectives, **Christin Bolewski** 289

Decomposing Landscape: Hearing the Troubled Site, **Budhaditya Chattopadhyay** 297

Imagined Geographies, Interstitial Futures*, Guatemex,* **Claudia Costa Pederson** 303

Place-making With Telepresence: A Navigation Guide to *A Journey into Time Immemorial's* Seven Exhibition Spaces, **Claude Fortin** 310

Emergence of (Experimental) Computer Art in Brazil: Pioneers and Events, **Tania Fraga, Maria Luiza Fragoso** 321

Warfare Outcome as a Ground for Destruction of Heritage and Real Estate Development, **Murat Germen** 327

The Exhibition Space through the Presence of Digital Games, **Pablo Gobira** 335

PRESERVATION OF ELECTRONIC AND DIGITAL ART IN THE CONTEXT OF MUSEUMS: An Information Management Perspective, **Pablo Gobira, Tadeus Mucelli** 343

Weeping Bamboo: Resonances from Within – Exploring Indigenous Memory, **Andreas Kratky, Juri Hwang** 352

Soundscape as a Pedagogical and Reflective Tool for the Preservation, Resignification, and Creation of Narratives about the Colombian Coffee Cultural Landscape: visual arts Laboratories of the Ministry of Culture, **Joaquín Llorca, Mauricio Guerrero, Ana Garay, John Ordóñez** 358

Preservation of Material and Immaterial Heritage through Interactive and Collaborative Artistic Interventions, **Andréia Machado Oliveira, Felix Rebolledo Palazuelos, Hermes Renato Hildebrand, Tatiana Palma Guerche** 364

Media Culture and Heritage: Curating Outsidership, **Simone Osthoff** 372

And the Earth Sighed a Case Study, **Julianne Pierce, Leon Cmielewski, Josephine Starrs** 378

Design, Art, Science and Technology 383

Curatorship and New Media: Possible Dialogues, **Priscila Arantes** 385

Retracing the Story of Bourges's Institute of Electroacoustic Music through, Exploratory Programming and Live Visualizations, **Florent Di Bartolo** 391

Un-Earths: Landscape, Memory & the Global Map, **Lawrence Bird** 398

Creation of Meaning in Processor-based Artefacts, **Miguel Carvalhais, Pedro Cardoso** 408

The Demise of the Frame: A Media Archaeology of Motion Prediction, **Ricardo Cedeño Montaña** 415

Encoding Colours: From the Trichromatic Theory to the Electromagnetic Signals, **Ricardo Cedeño Montaña** 421

Avoid Setup Insights and Implications of Generative Cinema, **Dejan Grba** 427

Digital Material and Creative Practice, **Esteban Gutiérrez Jiménez** 436

Design Process for Wearable Technologies and Urban Ecology, AirQ Jacket, **Maria Paulina Gutiérrez Arango, Julián Jaramillo Arango** 443

Interactive Art Based on Musical Genealogy: Nam June Paik's Random Access, **Byeongwon Ha** 453

Diligent Operator: The Resurrection of Musique Concrète with Max/MSP Jitter and Arduino, **Byeongwon Ha** 461

idMirror, **Maša Jazbec, Floris Erich Arden, Hiroo Iwata** 468

Compositional Approaches to Spatialisation with the speaker.motion Mechatronic Loudspeaker System, **Bridget Johnson, Ajay Kapur** 475

Extending/Appending The Perceptual Apparatus: A History of Wearable Technology in Art, **Blake Johnston, Michael Norris, Ajay Kapur, Jim Murphy** 482

Corporeal Cinema: Tactility and Proprioception in Participatory Art, **Raivo Kelomees** 492

Does Ritual Disappear as Walter Benjamin describes in "The Work of Art in the Age of Mechanical Reproduction" in the Age of Digital Technology?, **Minso Kim** 502

Politics of HCI and the User–Programmer Continuum, **Tomás Laurenzo** 507

Temporary and Distributed Libraries, Breaking Boundaries, Creating New Resources, **Alessandro Ludovico** 511

Valuably Unsought: Systems for Digital Serendipity, **Ricardo Melo, Miguel Carvalhais** 515

Journalism Visualization Devices: Six Visual Modes of Seeing, **Hugo Alonso Plazas** 523

Projects Desluz and ZN:PRDM (Neutral Zone: A River Passes Through Me) by Poéticas Digitais Group, **Gilbertto Prado** 530

Capricious Creatures: Animal Behavior as a Model for Robotic Art, **Treva Michelle Pullen** 539

The Return of Wonder: Speculative Robotics and Re-enchanting the Machine, **Treva Michelle Pullen** 546

Visualization of Climate Change in Internet, **Rodrigo Rosales González, Ana Carolina Robles Salvador** 554

Techno-Emotional Bodies, **Jéssica Anahí Roude** 561

Design of Pictographic Signs for the Educational Area, **Juan Carlos Saldaña Hernández** 568

Artistic Brain: A Complex Nonlinear System as Advanced Neuroesthetic Research, **Jongcheon Shin, Joonsung Yoon** 572

On The Cohesion of an Electronic Device Ensemble, **Miguel Vargas, Andrés Saldarriaga, Fredy Alzate** 579

Production Processes of Mexican Digital Artists, **Cynthia Patricia Villagómez Oviedo** 585

Motivation in Design Strategies for Behavior Change, **Camila Villegas, G. Mauricio Mejía, and Juan P. Velásquez**... 595

Panels 601

Bio-creation of Informatics: Rethinking Data Ecosystemsin the Network Economy, **Catalina Alzate, Offray Vladimir Luna Cárdenas, Pilar Sáenz, Sharath Chadra Ram, José David Cuartas Correa**..... 603

Civic Media & Data (h)ac(k)tivism: Environments, Tools and Practices for Critical Data+Code Literacy and Visualization, **Offray Vladimir Luna Cárdenas** 605

Data and Public Policy: An Approach to Data Ecosystems from a Human Rights Perspective, **Pilar Sáenz** 609

Signal Territories, Infrastructures and Intermediaries: New Interfaces for Art Science and Communication Policy, **Sharath Chandra Ram** 613

Democratization of Data: The Case of Internet of Things (IoT), **José David Cuartas Correa**..... 617

Latin American Forum Legacy, **Andrés Burbano, Juan José Díaz Infante, Esteban Garcìa Bravo, Felipe César Londoño** 620

New Realities of the Body in Contemporary Performance: Québec, European and Latin American Perspectives, **Isabelle Choinière, Andrea Davidson, Enrico Pitozzi**..... 630

Reimagining the Art Institution as an Open Source Civic Organisation, **Teresa Dillon**..... 641

Fake Organum: The Uneasy Institutionalisation of Art as Research, **Andrew Newman** 645

Forking as Cultural Practice: Institutional Governance after the DAO, **Matthias Tarasiewicz**..... 648

Establishing the Continuously Unfinished, The Institution as an Artistic Medium, **Sophie-Carolin Wagner** 654

Design for the Non-Human, **Tyler Fox, Elizabeth Demaray, Kira deCoudres, Leigh M. Smith, HeleneSteiner, Jordan Matthew Yerman, Adam Zaretsky** 657

Panel on Sonology: Sonifying the Conflict, **Julián Jaramillo Arango, Jorge Bejarano Barco, Tomas Laurenzo, Joaquín Llorca, Eneida LuzRamírez, Ana María Romano** 662

Training Methods for Transdisciplinary Collaboration: Best Practices and Didactics for Team Work, **Roger Malina, G. Mauricio Mejía, Andrés F. Roldán**..... 673

A transdisciplinary approach to research-creation. (When art is part ofeverything else), **Dr. Ricardo Dal Farra** ... 674

When a School of Satellites is a School of Photography, **Juan José Díaz Infante**..... 678

Towards an Inventory of Best Practices, for Transdisciplinary Collaboration, **G. Mauricio Mejía, Roger Malina, Andrés F. Roldán**..... 681

The Mutualism Relation within the Entrepreneurial Ecosystem, **Viviana Molina Osorio** 688

Interdisciplinary Innovation, Collaboration and Learning Processes inAcademia, **Paz Tornero**.....692

Art, Science and Anthropology Experiments: Inviting other Knowledge about Mosquito-borne Diseases through Transdisciplinary Collaborations, **Alejandro Valencia-Tobón**.....696

Higher Education for Sustainable Transitions by Mutual Learning in Immersive Transdisciplinary Real-world Laboratories (RwL), **Stella Veciana**.....700

Bio Visualization and Cinematic Experiences, **Ricardo Riveraa, Aaron Brakkeb**.....704

Multimodal Interaction, Medial Arts and Education, **Juliana Grisales, Esteban Correa**.....705

Digital Threshold. Art, Body and Self-reflection on the Screen, **Isabel Cristina Restrepo Acevedo**. 709

Evolved Architectural Representation: From Orthographic Drawings to Corporal Mapping and Swarm Behaviour, **Aaron Brakke**.....712

Moving Image + Data Visualization = Connection Visualization, **Ricardo Rivera Berrío**.....716

Bio-medical Signals in Media Art, **Claudia Robles-Angel, Lasse Scherffig, Johannes Birringer, Uwe Seifert** ...720

Electronic Art in Brazil: Exhibition Spaces, Museological Strategies and Digital Archive, **Cleomar Rocha, Marcos Cuzziol, Nara Cristina Santos, Priscila Arantes, Tânia Fraga & Malu Fragoso, Reynaldo Thompson**.....730

Archiving Digital Heritage: Pioneers of *Fin-De-Siecle* Latin America, **Reynaldo Thompson, Gabriela Aceves Sepúlveda, Andrés Burbano, Ricardo Dal Farra, José-Carlos Mariátegui, José Manuel Ruiz-Martin, Andrea Sosa, Rejane Spitz**.....737

Feminizing the Archives of Digital Art: Recovering the Work of Female Artists Working in Mexico, 1960-1980, **Gabriela Aceves Sepúlveda**.....739

Proto-Computational Arts and Photography, **Andrés Burbano**.....743

Was part of the media arts history swept under the carpet? (Latin America's lost ark), **Dr. Ricardo Dal Farra**.....747

Mariotti's Ritual Artefacts and the Origins of Media Art. In search of the Lost Multisensorial Characteristics of New media, **José-Carlos Mariátegui**.....751

Laboratories and Digital Experimentation Centers in Ecuador: First New Technologies Art Experiences, **José Manuel Ruiz Martín**.....755

Julio Le Parc & the GRAV: Instability, Movement, Active Past. A Perspective Look on his Work and Ideas from the Present of Electronic Art, **Andrea Sosa**.....759

Brazilian Pioneers in Art and Technology: Waldemar Cordeiro, Abraham Palatnik and Otávio Donasci, **Rejane Spitz**....763

ART/SCIENCE/TECHNOLOGY. Methodological Approaches and Sensitive Experiences Based on Nature Immersions, Field Trips and Rural Residencies, **Bart Vandeput (Bartaku), Karla Brunet Carlos Augusto (Guto) Nóbrega, Laura Bellof, Maria Luiza (Malu) Fragoso** 767

Environmental Aesthetics and Nature Immersion Art Practices, **Karla Brunet** 768

Aronia m.BaBe: Berry-artist(ic) Research, **Bart Vandeput (Bartaku)** 772

Immersions in a field phenomenon. Going with the flow, **Carlos Augusto (Guto) Nóbrega, Maria Luiza(Malu) Fragoso** 776

Uncanny Realm – The Extension of the Natural, **Laura Beloff** 780

Posters 785

Revealing Network Infrastructure at Geographic Scale Using Location Based Audio, **John Brumley** 787

Media Art in the Ibero-American Context ISEA2017, **Raquel Caerols Mateo, Beatriz Escribano Belmar** 791

Data HarVest: Physical and Digital Data Collection for Citizen Science, **Jen Liu** 794

La Última Alúa. Exploration of the Constituent Elements of *MOTION COMIC* in the Development of an Audiovisual Product, **Andrés Mauricio Montoya Villanueva** 797

ALGORICENE Genealogy, Ontology, Aesthetics and Politics of Algorithmic Life, from the Ancient World to Big Data, **Jaime del Val** 800

DIY Awareness of Ozone in Urban Desert Climates, **Jennifer Weiler** 802

Using Animated Vectors to Generate 3D Models from 2D Shapes, **Jennifer Weiler** 805

Roundtables 807

Proyectos Rurales ANT (Art Nature Technology), in Latin America, **Yto Aranda, Lucía Egaña Rojas, Pedro Soler, Daniela Moreno Wray, Gabriel Vanegas, Katharina Klemm, Valentina Montero, Vanessa Gocksch, Omar Gatica, Additional paper: Rachel Rosalen** 809

The Online Counter-collector, the Open Source Heritage, and the Museums of the Unfinished, **Giselle Beiguelman, Giovanna Casimiro, Nathalia Lavigne** 821

International Programme Committee 831

Journalism Visualization Devices: Six Visual Modes of Seeing

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Abstract

The growing number of visualization devices in the online journalism world draws attention to the mechanisms both technical and symbolic that build the relation between the producer and the user in the interaction with the device. This relation has been studied in different approaches and empirical research; some of them related to the visual studies field. This paper aims to contribute to the study of the visual aspects of this relation through the analysis of the implicit representation of the user that the producer depicts into the device. This symbolic approach tends to find the guidance operation for interaction as a prescriptive model of information consumption focused in the visual representation. This paper proposes six-visual modes for this guidance operation as the established models in the current online journalism: (1) visualization of events, (2) visualization of hidden issues, (3) visualization of spaces, (4) visualization of narratives, (5) visualization of the subject involved with data and (6) visualization of convergences. These six modes are defined and their characteristics explicated.

Keywords

Computer-Journalism, Data Visualization, Visuality, Visual Modes, Online Newspaper.

Introduction

In the last fifteen years online newspaper have included a growing number of visualization devices borrowing techniques, software and knowledge from the science to the benefits of the investigative journalism; a movement that receives names like data journalism, computational journalism, journalism as programming, etc. Nevertheless, theses devices includes certain ways to know and see as West et al. (2015) remind us in her analysis of the gap between the capabilities of data technology and traditional representations of data in media, art and society. She argues that we are facing a crisis of representation due to the prevailing of certain framing narratives in the choise of algorithms, statistics, representational schemas, displays, interaction technologies, and metaphors for processing and representing data. But before discarding these framing narratives we attempt to analyze them for the purpose of find the prevailing ways of see into the Journalism visualization devices (from now on JVD) and its way of guide the audience towards a point of view. We decided to proceed with this approach with the aim of find both the cultural origin of the visual communication practiced in the newsrooms and the social representations depicted into the visuality of the devices which makes sense and set the relation between the producer and the users.

For Segel & Heer (2010) data stories offers new techniques for telling current news due to their interactivity, capability of verification and alternative explanations. In their study, based on 58 collected examples of visualization devices, they gathered these techniques in seven genres: magazine style, annotated chart, partitioned poster, flow chart, comic strip, slide show and film/video/animation. This seven-genre system highlights the graphical and interactive elements present into a visualization device, though giving less attention to the experience of the reader. The Segel & Heer approach shows the visual elements of the interface as a non-linear-reading process opposed to the linear-text storytelling. In this paper we are going to put in practice a complementary approach to find the visual guidance symbolically built into the JVD with the purpose to expose the user experience that data journalists suggests to the news readers. This approach follows the *visuality* concept, which describes the way cultural objects speak for himself through a visual mode as J. W. Mitchell (1986) pointed out. Every cultural object shows its own visual mode depicting specific stagings, communication models, plausibility methods and social inscriptions. Therefore, interactive images, digital devices and technology developments present their own visuality as part of the contemporary culture. In addition, we take the concept "position of the viewer" analyzed by Kress & van Leeuwen who show that "the interactive meanings

are visually encoded in ways that rest on competencies shared by producers and viewers" (2006: 115).

In the first place, The JVD have been derivate from scientific-data visualization, which involves a set of technical abilities that can transform non- visual-nature data into visual expressions. These technical abilities allow throwing light upon some information both making it understandable and showing unknown facts or events. Besides, they take advantage of representational schemas or metaphors like maps, organization charts, narrative models, etc., to organize database information and produce cognitive reactions to the viewer. Lesage & Hackett (2013) point out that data journalism is mediated through discourses and practices from computational and journalism fields that relies on the social scientific epistemological traditions and expertise, including the journalistic ideals of objectivity, transparency and accountability.

Likewise, Edward Tufte (2006) suggests that data visualization aims to discover new knowledge, in the same way, the device that support it operates like the proof of that knowledge. Hence, visualizations devices combine two elements: the new knowledge accomplished and the device serving as evidence. This dual nature makes visualizations complex but not obvious objects. Complexity comes from the link of the new knowledge with certain visual expression creating a logic relation; that sort of relation is special because knowledge and expression hide behind each other, not allowing questioning their own existence. The task to discover visuality into the JVD consists of isolating visual expression from accomplished knowledge. This approach allows perceiving the socialforces footstep (like cultural and historical), which contributes to form the meaning and the communicative intentions from the producer on the JVD. The viewer accepts to play the role not only through the interactive possibilities offered in the interface but also by a particular visual mode.

The sorts of JVD visual modes are not alike; everyone has its owns interactive characteristics and its specific depicting features. This study analyzed 116 JVD produced between 2010 and 2012, which were awarded in the online category of Society for News Design´s Malofiej Awards. The analysis heads to the identification of six visual modes that show a strong presence within the selected corpus. In this paper we will display one JVD instance for each visual mode in order to describe the role suggested by the producer and the guidance for interaction as a prescriptive mode of visual-information consumption.

Visual Modes of Journalism Visualization

Visualization of Events

In this visual mode the interface works like a prosthetic eyes, which can view either beyond the natural vision (physiological) or what could not be seen due to its representational characteristics like engines, components, outer space, nanotechnology, etc. The prosthesis leads users to have a close view of the represented object and get an in-depth exploration of what is in front of eyes. This symbolic mechanism encourages the user to leave the limits of daily life view in order to open the eyes to the evidence exposed by the JVD and its arguments.

In some cases, the JVD depict visual instruments like telescope, microscope, even imaginary instruments able to trespass through walls, components, compartments and machinery parts. In other instances, the JVD allows to accelerate, slowing or repeating a video action with the goal of finding details, measure changes or just to appraise a social practice. This mechanisms work together with social science methods introduced by Philip Meyer in the newsrooms in the 60´s and called Computer-Assisted Reporting —CAR (Gynnild, 2014)

The JVD offers the user to embody an expert view, it means to take the glasses from specialists like judges, trainers, referees, polices officers, engineers, architects, etc., with the purpose to analyze data or events as an expert. In this symbolic movement the JVD not only use numerical data as their primary news material but also create a narrative structure, which user is the star actor bringing to light the information that a regular person couldn´t recognize. In the way to reinforce this representation the JVD interface depict control and measuring instruments to evaluate, estimate, judge, or supervise the information.

In the case of *El Juicio a las Juntas* (Figure 1), the interface penetrates the trail room where Argentina's ex dictators had been prosecuted for crimes against humanity. The JVD transport the sight to a place where offers a data-sensory experience, an emotional bonding with the trail and the awareness of the historic moment.

Figure 1. El Juicio a las Juntas. 2010, Argentina. ©Clarín

Visualization of Hidden Issues

The second visual mode brings to reality facts, information or patterns that would have been impossible to know in a non-visual way. The JVD reveals a hidden issue like discrimination, injustice or unfair treatment thanks to data patterns (like accumulation, reiteration, etc.) or statistical evidence (like time and space variations, etc.). The pass from invisibility to visibility occurs highlighting the unexpected knowledge and open it to public debate. This visual mode matches with traditional statistical journalism, which pursue to discovery the news behind the public data. Usually, this sort of "stories" strongly influences the media agenda and forces the investigation of the revealed issues (Parasie & Dagiral, 2012)

The visualization of hidden issues operates to raise awareness in the newsreaders about the size of natural disasters, responsibility for the planet, causes and effects of political decisions, etc. The readers should follow the path of discovery to check the argumentation and get the conclusions. This sort of JVD draws its explanation power on data evidence due to the use of data mining, data mapping and cross-referencing databases. Therefore, the user's involvement is not related to the immersive mechanism but for the argumentation.

Besides, interface makes use of visual conventions like pie charts, data tables and bar graph, etc. that enables to shape a new data into a familiar one. As Norman Bryson (1991) remind us in his critical study of vision, the use of codes of recognition allows to identify an object into the social landscape and therefore to be able to see. Once the news explanation is clearly viewed due to visual conventions it embeds into the general knowledge.

The JVD *How Mariano Rivera Dominates Hitters* (Figure 2) shows, for instance, the use of accumulation patterns to unveil the play style of the invaluable player of the New York Mets. This JVD attempts to reveal the special Rivera´s techniques due to the mix of data retrieved by The Movement Lab, the argumentative explanation exposed by the narrator and the video image sequence. The JVD discovers what is almost impossible to see for a regular person unless he has trained eyes.

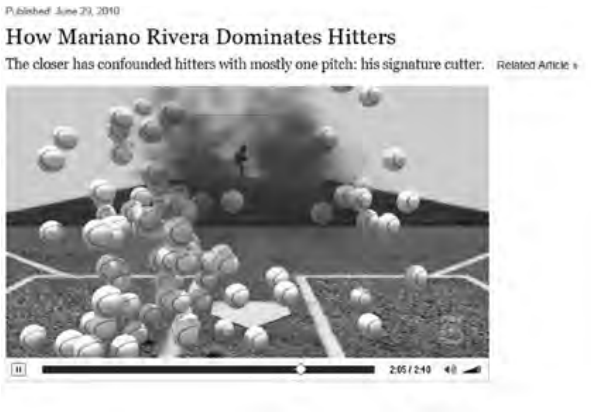

Figure 2. How Mariano Rivera Dominates Hitters. 2010, USA. ©The New York Times

Visualization of Spaces

This base-on-maps visual mode carries the user´s view into geographical spaces to collect data from the locations and find out some unexpected information. Maps usually displays some paths guided by visual and interactive tech-niques like trend chart, zoning and flow charts in order to discover the "story". In this case the upper interface layer —the annotation layer, which attaches labels for name places and measure distance— creates a framing vision of the territory using text boxes and graphic symbols. The JVD sacrifices a free-travel around the map for a guided story about places. In addition, map representation sug-gests to the users a dispassionate and natural view thanks to a group of conventions such as: Planimetry, scalability, point of view, observation distance (generally simulation of a satellite view), georeferencing and sociodemographic segmentation. All these technical elements improve the JVD´s plausibility and ease the user to achieve the agreement with the argument.

The art historian Ernst Gombrich (1982) refers to map´s view like a world selective gaze caused by pre-established symbolic determinants, like conventions, for the sake of simplify representations. Thus, in the map acts an insequence view of the information, which allows following varied routes into the map. In the same way, the map is a vestige of what cartographers saw as spatial proportions and identification of objects in the past. However, it must be taken into account that maps entail both a distortion and adaptation of reality. This idea sends the analysis back to the Jorge Luis Borges´s paradox about the scale between map and territory expressed in the short story *On exactitude in science* (1946). This story shows the impossibility of a perfect land representation because the maps just would duplicate the referent; hence the map representation can be only partial.

For instance, the JVD *Election* (Figure 3), which accompanied BBC´s live broadcasting of British voting in 2010, present a dynamic distribution of space according to the electoral results and the balance of power. This JVD compares different states or zones of events to draw the new map of power. The map represents each electoral district by a hexagon colored by the winner-party color. This adaptation creates not only a new British map but also an unbalance party-power distribution.

Figure 3. Election. 2010, UK. ©BBC

Visualization of Narratives

The features and advantages of narrative audiovisual structure offer support to this JVD visual mode, not only proving the argument exposed through the sequence of images but also arousing users' emotion and interest thanks to the *mise-en-scène*. In the field of argument, some visual and audiovisual techniques helps to validate the data like: appearing and disappearing images, highlights, acceleration and slowing of video clips, shots, sequences and scenes from the audiovisual language, etc. Moreover, the narratives structure frequently corresponds to a classical Aristotelian organization integrated for three acts: setup, confrontation and resolution. This structure links ideas, opinions, explanations, jokes, etc., to drive the story to a conclusive argument as a result of the linkage. This classic structure often arranges a confrontation between two opposites: the past against the present, right against wrong, myth against reality, etc. These confrontations reinforce the argument and lead the user to a logical conclusion.

Video techniques prevail in these JVD, even though they limit interactivity. This happens because video is an accessible and familiar format that requires only a passive-watching spectator. Arguments like editorial positions and abstract concepts such liberty, justice, patriotism and victory are convenient for being performed in this visual mode. In addition, an extradiegetic narrator organizes the story mixing archive images and showing them according to the script; this mechanism is proper for event reports, recaps and historical accounts. The image, in this performance, works as auxiliary of an argument drawing the visual elements to explain the central point.

These elements are performed in the JVD *Snow Fall* (Figure 4). The story tells the tragic moments lived by a group of skiers in the middle of an avalanche in Washington. A long-scroll rolls out five chapters of the story, each one including several multimedia elements such short videos, landscape photographs, graphics, maps, photo galleries, audiotapes, etc. All the elements are arranged by a structure script that heads the story in many details and emotional experiences.

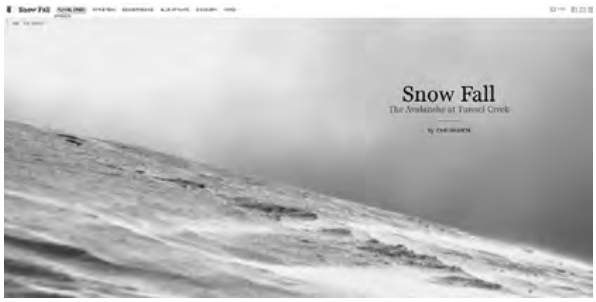

Figure 4. Snow Fall. The Avalanche at Tunnel Creek. 2012, USA. ©The New York Times

Visualization of the Subject Involved with Data

This sort of JVD enables users to get involve with data in such point that the subjectivity is also involved in. This visual mode matches with the Gynnild (2014) analysis of the data-journalism entrepreneurial approach, which claims for the idea of "journalism as programming" or the data-base as the locus of news attention. In this approach the user is in front of a non-mediated contact with raw data and the journalist accountability function is replace by algorithms. Parasie & Dagiral (2012) pointed out that these programmer-journalists take distance from the traditional conception of "story hidden in data" and claim for news as computer-processable data.

In the users field, this visual mode aims for the improvement of data searching. The contact between data and the user promotes a sense of control that enhances the sensorial immersion into the device. This user-data meeting creates personal and temporary significances different for each user. Therefore, the user generates the story of its own experience with data through the dramaturgy and staging provided by the JVD. According to Arlindo Machado (2009) the user projects its feelings on the screen, like in the case of videogames, in order of pursuing a new experience into the device, which only get results from a negotiation between the user and the software. Thus, the experience shapes the memory of the contact with data. In terms of time the user experience is endless, however the user defines duration of the experience as well as the starting point, rhythm, speed of ride, and closures.

This sort of experience could not be completely either planned or reckon by the producer, in many cases it depends on the capability of the device to allow the user project his imagination and interest on the interface. For instance, the JVD *World Cup Twitter Replay* (Figure 5) shows Twitter-users reactions of each match in the 2010 FIFA world cup. This JVD simulates a new game lived in parallel while the real one was being played. Twitter users act like players of its own virtual soccer team and match due to the real-time interface. In this stage personal data mix with database information building new —or at least unexpected— information. In this way, users become part of the news.

Figure 5. World Cup Twitter Replay. 2010, UK. ©Guardian

Visualization of Convergences

The last visual mode study in this paper operates through the translation of terms from one system to another, providing the same value of data (equivalence) in two different stages. In this case, a journalist or an expert does not produce the translation, instead it comes from a programming calculation that makes to converge datasets from databases with personal information introduce by user. It is consistent with Henry Jenkins convergence-culture concept whereby different media-content-flows are connected in technology platforms to produce experience and new significances. According to Jenkins (2008) the convergence encourages the users participation, interactive collaboration and collective intelligence. More than a simple technology concentration, convergence is a cultural action grounded in media technology that works like a social articulation.

This visual mode is more suitable for users´ personal searching than journalist stories. Users in front of this JVD must show dynamic attitude, participation skills and collectively sharing, even promoting activism and fanaticism. The activist attitude rejects the journalistic mediation and pursues for a self-constructed conclusions. A mix of skepticism and enthusiasm heads the users to reach the desired data experience. The JVD *Is It Better to Buy or Rent?*

Figure 6 visualizes the users' data (real or simulated) with database information to offer answers about the real estate market in NYC. The answer helps the user to build future scenarios, foresights and forecasts. The

visual experience does not exist until the user feeds the interface with personal data.

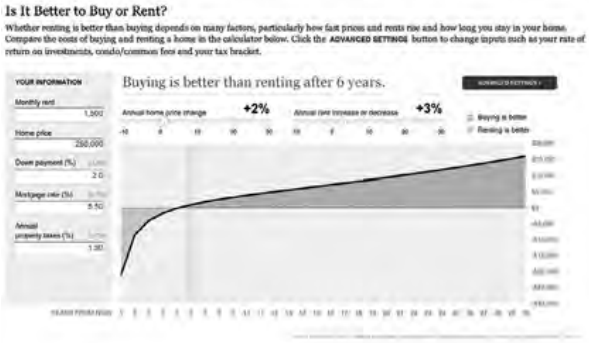

Figure 6. Is It Better to Buy or Rent? 2010, USA. ©The New York Times

Conclusions

This paper presents six visual modes of JVD identified from a corpus of some award-winning examples and analyzes the interaction of the user with the device, not only in a practical way, but also in a symbolic relation. These visual modes merge elements from the journalist tradition and technological improvements in the production of JVD. As a result, the current JVD not only explores new technical mechanism to access, decode, understand and present data, but also reinforces the journalistic precedent modes of report visually. Therefore, JVD production is more complex than a technological update, it implies to search and chose a desired experience for the potential users in a multiplied background of visual languages and ways of make sense. We are sure about the existence of an array of varied visual modes in JVD, different of those we discuss here, but the study shows that these six are the most established visual modes used in current online newspaper. Then, It is important to questioning about the mechanisms that privilege a group of visual modes over others.

The user experience with the JVD ranging from the visual aspect to the interactive behavior is complex alike. The user is invited to take some actions in view of get a complete experience with data and stay informed, but, at the same time faces a bunch of discourses represented through images, actions and data. As Lesage & Hackett (2013) pointed out, the technology, organizations and symbolic characteristics of online newspapers mediates data in such way to make it problematic. The six visual modes indicate that the way of seeing news affects the information in the same way that discourses affects our sight. To put it differently, to view information through JVD is a cultural action instead of a technological one. Moreover, the prescriptive models of guidance through the JVD involve more than a neutral consumption of information, it carries values, ethics, ideologies, etc. expressed in visual terms.

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