TOPOLOGY AT TATE MODERN
November 2011 — June 2012
Éric Alliez, Étienne Balibar, Drucilla Cornell, Olafur Eliasson, Oscar Guardiola Rivera, David Harvey, Bruno Latour, Catherine Malabou, Achille Mbembe, Sandro Mezzadra, Ernesto Neto, Luiz Alberto Oliveira, Suely Rolnik, Boaventura de Sousa Santos, Peter Sloterdijk, Shiv Visvanathan, Nigel Thrift, Margaret Wertheim and Peter Weibel are among the leading intellectuals, artists and writers who will be coming to Tate Modern as part of the Topology project.

Mathematicians in the first half of the twentieth century constructed Topology as a general theory of space. It initially emerged as an understanding of space in terms of properties of connectedness and invariance under transformation. Within a few years of its inception, psychologists, psychoanalysts, architects, artists, scientists and philosophers had started to use the conceptual language of relationships, intensities and transformations of this new theory outside its original field of mathematics. Limit, boundary, interior, exterior, neighborhood, disconnection and cut were central notions that became ways of describing the fields of forces experienced by individuals. Static ideas of space as a container were replaced by understandings of movement-space, of multiplicity, differentiation and exclusive inclusion that in turn have led to new ideas of power, subjectivity, and creativity.

(Continued overleaf)
Topological theory has thus come to serve as a link in a network of disciplines: in each case the multiplicity of space and the formal analysis of its relations has proved illuminating. Few commentators have made explicit the nature of this topological grounding however, and in many ways these mathematical realities have been allowed to fade into the background. The Topology series of events renders explicit what has been lost sight of in this process by inviting contemporary intellectuals, artists and writers to discuss how they make use of topology in their thinking, writing and making.

Initiated by Jean Matthee
Curated by Jean Matthee with Bernard Burgoyne, Marko Daniel, Julian Henriques, Celia Lury and Brian Rotman.

The Topology project is developed at Tate Modern in collaboration with NTNU Trondheim (Norwegian University of Science and Technology), Goldsmiths, University of London, Ohio State University and the Centre for Freudian Analysis and Research.
For the first in this series of keynote conversations on topology, philosopher Étienne Balibar will be joined by Sandro Mezzadra (University of Bologna) and psychoanalyst Bernard Burgoyne in a discussion of the wider significance of borders.

Political space includes a functioning of borders: national and trans-national frontiers are structures that are both political and topological. There exist very different kinds of border, according to the different kinds of texture of space. These textures determine pathways that are available to people in their everyday lives. But the pathways may be impasses, although a way through them can sometimes be constructed.

‘The current proliferation of borders provides an angle on really existing global processes. A geographical disruption, a continuous process of rescaling of political, economical, legal and cultural spaces lies at the heart of globalization. A unilateral focus on exclusion, which has long characterized critical interventions of scholars, artists and activists on the topic of borders, is not able to grasp the “productive” power of borders as crucial devices of articulation of global processes. A topological approach to the analysis of contemporary borders can help in this sense to understand the mobility and elusiveness of spatial formations that are marked as much by differentiation as by connection. Stressing the relevance of border struggles for the constitution and contestation of new assemblages of power and capital leads to consider the border not only as a topic of research but also as an epistemic angle on some of the most pressing political questions of the present.’

(Sandro Mezzadra, The proliferation and heterogenization of borders in the contemporary world)

This keynote conversation will be followed by a Secrets of Space seminar led by Bernard Burgoyne on 12 November.
Topology: Spaces of Transformation
Saturday 21 January 2012 14.00–16.30. Tate Modern, Starr Auditorium

Artist Ernesto Neto in conversation with physicist Luiz Alberto Oliveira, philosopher Éric Alliez and science writer and curator Margaret Wertheim, chaired by curator Tanya Barson.

The participants in this panel experiment with intensive forces of philosophy, art, physics and cosmology; opening affirmative spaces of becoming porous to the outside. These experiments express different topological modes that can be understood as immersion in multiple, complex processes of transformation and flux.

‘Culture separates bodies unify. How can we in a fragmented cultural planet, topolo-build a level of conviviality and habitability, beyond institutional skins, under a gravitational field?’
(Érnesto Neto, Conviviality and Habitability at the Edges of the World)

‘What does it mean to ‘know’? Topologically diverse and geometrically perverse, nature embraces throughout its evolutionary history structures of being that appal the most advanced mathematical minds. Knotted eels, crenellated corals and undulating sea slugs realize in their architectures spatial configurations that ‘educated’ humans long deemed impossible. Topology and geometry – the dual mathematical disciplines of form – have cascaded over the past two centuries into a series of intellectual revelations that had been physically understood in the organic realm since the Silurian age. Through an exploration of embodied knowledge in humble, sessile and brainless beings at the edges of human consciousness, this paper aims towards a rehabilitation of material wisdom, suggesting a radical, transformative alternative to modern symbolic modes.’
(Margaret Wertheim, The Hyperbolic Imaginary: Topology and Geometry as Bodily Being)

This keynote conversation will be followed by a seminar led by Bernard Burgoyne on 28 January 2012.

This paper will focus on Ernesto Neto’s installation at the Panthéon in Paris, Leviathan Toth (2006), which invests the Panthéon with a confrontation between the image of power (in its modern Hobbesian form) and the power of the image. Neto brings us into a semiotics of intensities that does not belong to the ‘aesthetic regime’, as described by Jacques Rancière, but rather to a diagrammatic agency addressed to Site-specific Art. The latter will be (re)constructed after Deleuze and Guattari — from a biopolitics of the Body without Organs to a Body without Image. This Body confines on signs a new material power of decoding, which destratifies the space (physical, symbolic, discursive, institutional) anchored around the oscillations of Foucault’s Pendulum, in an energetics of forces. It thereby offers a diagrammatic alternative to the metaphor-image of Aesthetics.’
(Éric Alliez, Diagrammatic Agency versus Aesthetic Regime: Ernesto Neto’s Anti-Leviathan)

‘In recent years the application of topological concepts and methods to the study of dynamic systems has led to important advancements in our understanding of some basic aspects of the behaviour of complex phenomena appearing in different domains – material structures, living organizations and cognitive processes. Beside their intrinsic scientific importance, the new universality patterns emerging in such phenomena have significant implications for philosophy such as the venerable problem of morphogenesis, or generation of forms. Artistic endeavors, such as Ernesto Neto’s works, are pushing these formal almost abstract questions far beyond the purely intellectual realm, into a novel horizon of powerful aesthetic resources.’
(Luiz Alberto Oliveira, Topology and Complexity: an Endeavor)
'It is necessary to unlearn space in order to embody space.

It is necessary to unlearn how we see in order to see with our bodies.

It is necessary to unlearn knowledge of our body in three dimensions in order to recover the real dimensionality of our body.

Let's dance space.

Let's re-space our bodies.

Let's celebrate the felt feeling of presence.'

[Olafur Eliasson, Unlearning Space – Spacing Unlearning]

'Three dimensional space is not a given but the result of a long history through which the spatial characters of a very specific historical definition of what it is to be “in the world” has been entrenched in common sense. Those characters are largely coming from the visual techniques of a highly specific body of paintings and, from there, have been extended to philosophy of science, to technical drawing, to design and to architecture. But this does not mean that organisms – to reuse Whitehead’s term – do reside in res extensa. It means that it has become difficult for them to follow the thread of experience – including visual experience as demonstrated by Gibson. The interesting question is to check if the general turn to ecology allows one to regain the sense of experience and to redefine space along the lines proposed by Peter Sloterdijk as an artificial envelop.’

[Bruno Latour, Space is a Contested Territory]

'Graph Theory is the newest branch of topology, which allows us not only to understand the construction and transformation of spaces, but also above all to understand behaviour in space and the unfolding of spatial parameters. According to Darwin the tree of life is the coral of life. But what Darwin describes as evolution could be seen as a special case of Graph Theory. Topology is therefore a new mathematical tool to better understand the concepts of evolution as spaces of transformation. Newton described the laws of mechanics as the space ruled by the laws of gravity. Lagrange gave us a mathematical model of Newton’s space. Einstein and Quantum Theory redefined the absolute space of Newton as relativistic space-time continuum.

Graph Theory as topology continues the work of Lagrange and Einstein into the digital age.’

[Peter Weibel, Graph Theory as Topology]

This keynote conversation will be followed by a seminar led by Bernard Burgoyne on Saturday 10 March.
Topology: Spaces of Transformation
Saturday 28 April 2012
Tate Modern, Starr Auditorium

This panel explores counter-hegemonic trans-national networks, global voices and cartographic practices that map the abyssal line between epistemologies of the North and the South. Reinventing social emancipation opens the processes of democracy to heterogeneous outside, de-territorializing universal topoi and spaces of power. These emancipatory processes are expressed in the struggles for participatory democracy manifest in the Arab Spring, the growing occupation movement and the landless workers movements. Another form of knowledge is possible.

'The understanding of the world by far exceeds the Western understanding of the world. Northern epistemologies draw abyssal lines between zones of being and zones of non-being, thereby committing epistemicide and wasting social experience in a massive scale. Mapping the lines is as much a search for absent knowledges as it is a search for absent beings. Knowing otherwise is also being otherwise. Knowing and being in a post-abyssal way involves a constant exercise of intercultural translation.'

(Boaventura de Sousa Santos, Self-determination as Sumak Kawsay, Hindi Swaraj and Ubuntu)

Suely Rolnik instantiates the production of another form of knowledge exposing the topological relations between affect and thought, disquietude and creation: an ethical-aesthetic resistance to the repression of the drive, unconscious in the endless process of invention of oneself and of the world. For her, such repression is the main colonial operation from a micropolitical perspective. Through poetics/analytics/politics she mobilizes affect and shifts stagnation in the micro-spaces of the body, the folds of the soul and pleats of matter.

'What is non-negotiable in my theoretical, clinical, curatorial and teaching practices? What is non-negotiable in my every day life practices? It is what demands to be embodied, the force that obliges me to think, that is, to create. This poetical force is the only non-negotiable element when the negotiation with economical or macro-political interests is unavoidable. In other words, what is non-negotiable for me is the force of desire in its negotiation with narcissistic or social recognition interests – be they my own interests or external ones. It is a kind of drive pragmatism oriented by an ethical compass. Isn’t that the fundamental meaning of sublimation, if we understand it as sublimation-actions, the actions we are always trying to invent in order to actualise drives?’

(Suely Rolnik, Beyond Colonial Unconscious)

'Democracy which functions in linear time is illiterate. Without a multiplicity of time, the diversities of citizenship cannot be sustained. Distributive justice without cognitive justice cannot democratize democracy. Only the epistemologies of democracy can rescue politics from the tyranny of an official science. The explosion of citizenship has created an epistemic movement where democracy can be reinvented in terms of the new dialects of emancipation.’

(Shiv Visvanathan, Knowledge and Democracy: Between the Imagination and the Imaginary)
**SPATIALISED IMMUNITY**

**PETER SLOTERDIJK IN CONVERSATION WITH NIGEL THRIFT**

Topology: Spaces of Transformation
Saturday 16 June 2012
Tate Modern, Starr Auditorium

Peter Sloterdijk's philosophico-morphological theory is based on an understanding of the history of culture as spatialisations of forms. The world in which we live now requires us to design new types of 'spatialised immunity'. More broadly, the concept of a spherical logic of space – a polymorphologic of form, order and thinking – is explicated in Spheres, his three-volume archaeology of the human attempt to dwell within spaces, from womb to globe. The Spheres project (Bubbles, Globe, Foam) is a significant topological turn in the field of contemporary philosophy, 'a super-workout for communicative energies capable of finding contact throughout the entire world.'

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**THE VAST SPACE-TIME OF REVOLUTIONS BECOMING**

**DRUCILLA CORNELL, DAVID HARVEY, ACHILLE MBEMBE. CHAIRED BY OSCAR GUARDIOLA RIVERA**

Topology: Spaces of Transformation
Saturday 12 May 2012
Tate Modern, Starr Auditorium

This panel constitutes the spirit that opens up new potentiality spaces for human thought and action toward a transformative movement labilising the state of things that is always there for the making and the taking – pushing human possibilities to their limits. This is what gaining the courage of our minds is all about: to take a speculative plunge into the unknown and the unknowable – facing up to a world of uncertainty and risk where the social and the ecological orders are unpredictable and unstable. What counts is open dialogue and practical interactions across multiple theatres on this long frontier in the vast space-time of revolutions becoming.

Drucilla Cornell, *The Site of Revolution*
David Harvey, *Spaces of Anti-Capitalist Transition*
Achille Mbembe, *Zero-World*

Can topological practices be neutral? Is topology an encounter with truth, a production of knowledge or merely a tool? Is there a politics of knowledge production to be taken into account here? Who are the addressees? If the conceptual language of relationships, intensities and transformations informs a radical understanding of political conflicts, ecological crisis, neo-liberal capital, civil insurrection unfolding in the contemporary world, the ambition of many of our invited speakers is to challenge normative geometries with topologies of resistance that de-centre spaces of domination. Topology: *Spaces of Transformation* is aimed at rendering explicit the urgency of topological thinking in creating the conditions to live with courage of mind, to navigate the co-existent forces of a globalized world: *To live as insurgent architects of spaces of hope.*
Spaces of Transformation will incarnate through performance, an intensive non-ordinary moment of space-time, a closing celebration that will give shape and meaning to the entirety – changing, shifting and integrating. A dynamic paradoxically entangled topological logic, with future-anterior foldings into and out of other heterogeneous space-times in relational processes of becoming. Part of Spaces of Transformation; conceived by Jean Matthee.
Embodying Transformation is a performance programme devised by Goldsmiths, University of London, and Ohio State University as part of the Topology events at Tate Modern. This performance programme comprises two events designed to give an embodied experience of topological concepts. Knots & Donuts is an immersive sound sculpture for listening to shapes drawn in three-dimensional space. Ordinal 5 employs dancers to explore mathematical concepts. These events combine into a one hour programme, including an opportunity for discussion with the artists. Embodying Transformation devised by Julian Henriques, Goldsmiths, University of London and Brian Rotman, Ohio State University

Embodying Transformation would not be possible without generous support from: The Ohio State University, College of Arts and Humanities, Goldsmiths, University of London, Illustrious, 3d Audioscape, Duran Audio UK, Creative Sound Design, Martin Professional Plc, Ambersphere Solutions Ltd, Richard Martin Lighting and Pip Rhodes Lighting Design
KNOTS & DONUTS

JULIAN HENRIQUES

Topology: Embodying Transformation
Saturday 19 November 2011, 14.00–15.00, 16.00–17.00, 19.00–20.00
Sunday 20 November 2011, 14.00–15.00, 17.00–18.00
Tate Modern, East Rooms

This immersive sound sculpture explores auditory geometry by spatialising sound and sonifying space. Knots & Donuts makes use of a three-dimensional sound field to allow participants to experience the sensory qualities of acoustic space and time – outside the usual visual conventions. Attuning the ‘mind’s ear’ and the auditory imagination, the listener hears a continuous travelling sound ‘drawing’ shapes around them, as a sparkler might do in light. In this particular sculpture, the moving sound source outlines circles and two topological shapes - a Borromean knot and Torus or donut.

Conceived by Julian Henriques (Goldsmiths, University of London). Sound editor: Asa Bennett with thanks to Matt Lewis and Philip Chandler. Vibrational Fields pre-event soundscape conceived by Cláudia Martinho.

ORDINAL 5

BRIAN ROTMAN

Topology: Embodying Transformation
Saturday 19 November 2011, 14.00–15.00, 16.00–17.00, 19.00–20.00
Sunday 20 November 2011, 14.00–15.00, 17.00–18.00
Tate Modern, East Rooms

In this project dancers perform abstract mathematical ideas within an acoustic environment that allows sound to be spatialised around the dancers and the audience. The piece actualises a specific mathematical entity, the ordinal number 5, as this is understood in the language of categories.

Conceived by Brian Rotman (The Ohio State University, choreography Jeanine Thompson, sound art Dan Scott, costume Kristine Kearney, performers Owen David, Natalia Hagan, Moopi Mothibeli, Ibsen Santos, Beth Simon, Rachel Switlick.)
Topology investigates the fabric of space. It looks into the texture of not merely physical space, but of all conceivable other spaces – spaces of phrases, spaces of colours or sounds, spaces of moods and passions, all spaces of operations on the human soul. Topology resolves the problem of what it is that holds a space together: of what it is that ties a point to its neighbouring regions. Human subjectivity is investigated using concepts of pathway, frontier or boundary; many formulations are possible – neighbourhood; limit; region; inside; outside; openness or closure – all of these can be used to formulate the secret of space.

These seminars will investigate a variety of spatial attributes appealed to by the cultural and political theories discussed in the Starr Auditorium during the Topology: Spaces of Transformation keynote conversations. They will give participants a familiarity with the texture of space. Their aim is that of reformulating the socio-cultural questions by bringing them into parallel with the spatial realities that they presuppose. Rather than allowing the question of space to fade into the background, these seminars draw topology into a relationship with these wider politico-cultural questions, in this way giving them a firmer orientation, while presenting them in a new light. Secrets of Space led by Bernard Burgoyne
Spaces of Transformation: (keynote conversations)

Borders
Étienne Balibar, Sandro Mezzadra (The proliferation and heterogenization of borders in the contemporary world), Bernard Burgoyne chaired by Marko Daniel
Saturday 5 November 2011

Edges of the World
Ernesto Neto (Conviviality and Habitability at the Edges of the World), Luiz Alberto Oliveira (Topology and Complexity: an Endeavour)
Éric Alliez (Diagrammatic Agency versus Aesthetic Regime: Ernesto Neto’s Anti-Leviathan)
Margaret Wertheim (The Hyperbolic Imaginary: Topology and Geometry as Bodily Being) chaired by Tanya Barson
Saturday 21 January 2012

Continuity/Infinity
Olafur Eliasson (Unlearning Spaces – Spacing Unlearning), Bruno Latour (Space is a Contested Territory), Peter Weibel (Graph Theory as Topology) chaired by Catherine Malabou
Saturday 3 March 2012

Epistemologies of the South:
Reinventing Social Emancipation
Boaventura de Sousa Santos (Self-determination as Sumak Kawsay, Hindi Swaraj and Ubuntu)
Shiv Visvanathan (Knowledge and Democracy: Between the Imagination and the Imaginary)
Emancipation Beyond Macro-politics
Suely Rolnik (Beyond Colonial Unconscious)
Saturday 28 April 2012

The Vast Space-Time of Revolutions Becoming
Drucilla Cornell (The Site of Revolution)
David Harvey (Spaces of Anti-Capitalist Transition)
Achille Mbembe (Zero-World) chaired by
Oscar Guardiola Rivera
Saturday 12 May 2012

Spatialised Immunity
Peter Sloterdijk, Nigel Thrift
Saturday 16 June 2012

Spaces of Transformation (Continued): (performance)

Spaces of Transformation: Closing Performance
Rubedo (Diodicity)
Saturday 16 June 2012

Spaces of Transformation conceived by
Jean Matthee

Secrets of Space (seminars)

Saturday 12 November 2011, 14.00–16.00
Saturday 28 January 2012, 14.00–16.00
Saturday 10 March 2012, 14.00–16.00
Saturday 5 May 2012, 14.00–16.00

Secrets of Space led by Bernard Burgoyne

Embodying Transformation (performance)

Events throughout the weekend of Saturday 19 – Sunday 20 November 2011
Devised by Goldsmiths, University of London and Ohio State University. Knots & Donuts. Conceived by Julian Henriques (Goldsmiths, University of London). Ordinal 5. Conceived by Brian Rotman (The Ohio State University), choreography Jeanine Thompson, sound art Dan Scott, costume Kristine Kearney, performers Owen David, Natalia Hagan, Moopi Mothibeli, Ibsen Santos, Beth Simon, Rachel Switlick.

Embodying Transformation devised by Julian Henriques, Goldsmiths, University of London and Brian Rotman, Ohio State University

Bookings and Further Information

Further information on programme, tickets and availability please visit Topology at Tate Modern on www.tate.org.uk/modern or telephone 020 7887 8888.