



A NEW MANIFOLD

STÄDELSCHULE ARCHITECTURE CLASS

- ADVANCED ARCHITECTURAL DESIGN
- CRITICAL PRACTICE
- PERFORMATIVE DESIGN
- THE AIV MASTER THESIS PRIZE

- BEN VAN BERKEL
- JOHAN BETTUM
- BEATRIZ COLOMINA
- MIRCO BECKER
- CHRISTIAN VEDDELER

SAC JOURNAL

A NEW MANIFOLD

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COLOPHON

BEN VAN BERKEL

Ben van Berkel is a professor of conceptual design and the dean of the Städelshule Architecture Class. Van Berkel studied architecture at the Rietveld Academy in Amsterdam and at the Architectural Association in London, receiving the AA Diploma with Honours in 1987. His first projects were built almost immediately after founding *van Berkel & Bos Architectuur Bureau*. Among the buildings of this first period are *Karbouw*, the *Remu Electricity Station* and *Villa Wilbrink*. Being elected to design the *Erasmus Bridge* in Rotterdam (1996) profoundly affected his understanding of the role of the architect today and constituted the foundation of his collaborative approach to practicing, leading to the foundation of UNStudio in 1999. Recent projects, which reflect his long-standing interest in the integration of construction and architecture, are the *Mercedes-Benz Museum* in Stuttgart (Germany, 2006), *Arnhem Central* (Netherlands, 2007), *GOW Nippon Moon* (Japan, 2012).

JOHAN BETTUM

Johan Bettum is a professor of architecture, the programme director of the Städelshule Architecture Class and vice-dean of Städelshule. Bettum studied at the Architectural Association (AA) after gaining a BA with a major in biology

from Princeton University. He has taught and lectured, amongst other places, at AA, UCLA, the Berlage Institute, Innsbruck University, the EPFL, Lausanne. His main interests reside in the intersection between materials, geometry and architectural design. He was a research fellow at the Oslo School of Architecture from 1997-2001 and headed a nationally funded research project on polymer composite materials in architecture. Until 2000 he led the *OCEAN group* in Oslo whose work on polymer composites and advanced digital modelling greatly influenced the group's projects in this period. Bettum's PhD is entitled 'The Material Geometry of Fibre-Reinforced Polymer Matrix Composites and Architectural Tectonics'.

CHRISTIAN VEDDELER

Christian Veddeler is a guest professor at the Städelshule Architecture Class where he leads the second-year thesis specialisation, *Advanced Architectural Design* with a focus on system thinking in architecture. As an associate director at UNStudio in Amsterdam he is responsible for the design and execution of several international projects. Currently, he is lead architect on the project for the Singapore University of Technology and Design. In close collaboration with Ben van Berkel, he was in charge of a series of pavilion projects focusing on integral and emergent design processes, such as the *Holiday Home* at UPenn's ICA, the *Changing Room* for the Venice Biennale, the *Burnham Pavil-*

ion in Chicago, the *New Amsterdam Pavilion* in New York City, the *Motion Matters Series* at Harvard GSD, *Aedes* in Berlin and the *Maxxi* in Rome. His continuous involvement in academia includes numerous teaching assignments, amongst others at Harvard University, TU Delft, the Berlage Institute and the University of Illinois in Chicago. He is a registered architect and received a Master of Science degree in Architecture with honours from Delft University of Technology.

MIRCO BECKER

Mirco Becker, guest- and 'Stiftungs'-professor at the Städelshule Architecture Class brings his knowledge in computation and geometry in the design and execution of projects to the Master degree specialisation, *Architecture and Performative Design*. He has been responsible for building up advanced expertise in this emerging area of architectural design at offices, such as Foster and Partners and Zaha Hadid Architects in London. At Hadid's office, Becker worked as a lead designer with responsibility for BIM integration on various projects. Before this, Becker was senior associate principal, heading the Computational Geometry Group at Kohn Pedersen Fox in London for five years and responsible for the geometric design for the Abu Dhabi Airport. At Foster and Partners he was a member of the Specialist Modelling Group. He has taught in Diploma Unit 1 at the Architectural Association (AA) in London (2003-05), was a visiting professor for Digital Design Methods at Kassel University (2006-08) and

tutored at the AA Design Research Lab. His work has been exhibited and published in Europe, the US and Asia, including at the Latent Utopias and Beijing Biennale. Becker founded *informance* 2012 in Berlin and holds an M. Arch. degree from the AA. His position at the Städelshule is generously supported by the *Heinz und Gisela Friedrichsstiftung*.

BEATRIZ COLOMINA

Beatriz Colomina is an architectural theorist, professor and founding director of the programme 'Media and Modernity' in the School of Architecture, Princeton University. She has written extensively on questions of architecture and the modern institutions of representation, particularly the printed media, photography, advertising, film and TV. Among her works are 'Privacy and Publicity: Modern Architecture as Mass Media' (1994, AIA 1995 International Book Award); 'Sexuality and Space' (1992, AIA 1993 International Book Award); 'Architecture Production' (1988), 'Double Exposure: Architecture through Art' (Madrid, 2006); 'Domesticity at War' (2007) and 'Clip/Stamp/Fold: The Radical Architecture of Little Magazines 196X-197X' (2013). She has been on the editorial boards of *Assemblage*, *Daidalos* and *Grey Room* and lectured at institutions and events throughout the world. She is the recipient of several prestigious grants, including from the Chicago Institute for Architecture, SOM Foundation, Graham Foundation, Fondation Le Corbusier, and the Center for Advanced Studies in the Visual Arts in Washington.

JOHAN BETTUM EDITORIAL

A NEW MANIFOLD FOR THE DISCIPLINE AND ITS DISCOURSE

With this inaugural issue of the SAC Journal, *A New Manifold*, the Städel Schule Architecture Class (SAC) reflects on its postgraduate master programme. In its ambition to contribute to the development of architecture through research, experiments and the excellence of its graduates, SAC-like other educational programmes - faces an increasingly multitudinous and complex context in addressing the future of architecture. Yet, *A New Manifold* is also the beauty and multi-faceted opportunity that this future offers.

Contemporary architecture, whether pursued academically or professionally, must answer to growing societal pressures of all different kinds. This includes increased public concerns with what is built in cities where land is often scarce and expensive; scrutiny of the use of money for public projects; heightened awareness of environmental responsibilities; increased technical demands and regulations, and so much more. In addition to this comes architecture's expanded horizon of improved and new technologies, be it in the form of novel material systems, construction methods or infrastructural and service systems. In sum this offers a plenitude of possibilities, a rich fauna of architectural futures leveraged by the discipline itself, contemporary technology and the wild and beautiful power of architectural imagination.

Given the complexity of this future one may ask if it is at all possible to maintain architecture as a holistic discipline where the architect is typically thought to be a generalist, knowing a little about a lot and answering to everyone? The new manifold, which is the sum total of the contemporary condition for architectural explorations and production, proffers a nervous platform for future practitioners and theorists. In the process, will this not dismantle the architect

as the master builder and once and for all bury the illusion that buildings are signed off by a single individual who draws inspired sketches of his or her complex designs? Or, will it once and for all deliver us to the free market vernacular, a built tomorrow without architects?

Meanwhile, architecture still demands an *idea* of the whole or, at least, a *will* to contribute to this whole. The new manifold needs to be collected and directed.

At SAC, these questions lead to research and experiments that unequivocally celebrate architecture as a discipline and architectural design as its greatest and most passionate expression. A modest reflection of the new manifold is to be found in SAC's small size and the way its programme is sub-divided and structured. SAC is the meeting ground of its origin, the classical master class, and the new manifold. It is the continuous negotiation of the many and the one. This negotiation does not conflate either of these; it is fully focused on architectural design as a discipline, understood in all its historical glory and served at best through a continued, experimental approach in the form of research. In the second of the programme's two-year course, leading up to the master thesis, SAC offers its students three alternative thematic specialisations, each led by a professor or guest professor.

SAC's specialisations are: *Advanced Architectural Design*, which invites its students to develop a design thesis around a building proposal driven by research on a select, annual topic while considering architecture a product of the traditional, modernist amalgam of form, programme and structure; *Architecture and Performative Design*, which approaches building design with a focus on how material,

constructional and technological systems influence design decisions and the final thesis outcome; and lastly, *Architecture and Aesthetic Practice* (until July 2013 called *Architecture and Critical Spatial Practice*), which attempts to benefit from SAC's unique relation to the arts within the Städelschule and use art theory and practice to invigorate architectural discourse and design.

Thus, comprising its own small manifold, SAC sees the three specialisations as complementary to each other and pursues the liveliest possible exchange between the faculty and students involved in the programme.

To portray SAC's approach to architectural design, the first issue of the SAC Journal presents the projects that were nominated for the first ever *Master Thesis Prize* at SAC in July 2013. The prize was generously supported by the Architekten- und Ingenieur Verein Frankfurt am Main (AIV), which also has supported this publication. The finalists represent all three second-year specialisations. *The Master Thesis Prize* was won by Kavin Horayangkura with Lerpong Rewtrakulpaiboon receiving an honourable mention.

Guest professor Christian Veddeler introduces the work conducted in his group, *Advanced Architectural Design*. Guest- and 'Stiftungsprofessor' Mirco Becker introduces the projects completed under his tutelage in *Architecture and Performative Design*. Lastly, the project completed in the specialisation, *Architecture and Critical Spatial Practice*, led under this name by Markus Miessen from 2011 until 2013, is introduced by professor Johan Bettum. In addition to SAC's tutors and many guests providing invaluable support and guidance, guest professor Mark Fahlbusch, of the engineering firm Bollinger+

Grohmann Ingenieure, consulted the students in structural design and material choices for their project's.

The first part of *A New Manifold* presents three essays, each by a member of the SAC faculty. SAC's dean, professor Ben van Berkel, teams up with Karen Murphy to delve on architects' responsibilities and opportunities within the current professional climate. Their essay, *Architectural Practice within the Context of an Expanded Profession*, calls for intense research efforts and attention to the 'softer side of the profession'.

Johan Bettum, professor and SAC's programme director, unfolds his ideas about teaching architecture in the face of the many influences that will weigh on future architects. His essay, *How to Collect Fragments*, traces the contemporary fragmentation of the discipline and provides comfort by arguing that strategic design methodologies may also defend it by catering to the essence of the discipline through language and close collaborative ties.

Last but not least, SAC's guest professor in history and theory, Beatriz Colomina, turns her attention to SANAA's installation in Mies van der Rohe's *Barcelona Pavilion* (2008-9). Under the title, *Out-Miesing Mies: SANAA in the Barcelona Pavilion*, she expounds on a contemporary notion and role of transparency, demonstrating that disciplinary issues are not only alive but can be probed, devolved and, in astounding beauty yet shocking simplicity, contribute to the continued development of the discipline of architecture.

ARCHITECTURAL PRACTICE WITHIN THE CONTEXT OF AN EXPANDED PROFESSION

With the emergence of the digital age and the introduction of computational tools and design techniques, architects have not only experienced substantial changes to their methods of practice in recent times, they are also now faced with designing for a rapidly changing and increasingly connected world. A world of changing lifestyles and one in which innovation is no longer limited to isolated 'experts', but where instead social innovation quickens the pace of progress and challenges architects to reassess the core strengths and results of both their methods and their output.

In a recent article for the Financial Times, Charles Leadbeater stated: 'Digital technologies are innovation multipliers: each new wave of technology amplifies our ability to create, [...and...] this is changing what people can do and where they can do it, reducing their reliance on professionals and formal institutions.' Most interesting is his perception of how the current digital age differs from times of rapid progress in the past: 'Whereas all previous civilisations created technologies that were tools to amplify our capacities, in this mobile and networked age, technology will become more like a form of life, which we will inhabit, all of the time.'¹

For the architect then, it is not digital design tools and methodologies alone that are bringing about change. It is precisely the shifts in how we live, work and play – this 'form of life' and the repercussions thereof – that have an essential role in determining what buildings are required to provide; how they need to operate, how they are organised and ultimately how they are experienced by the user. It could be said that it is in fact these concerns that have played an essential role in propelling the most significant changes that have occurred within the profession in recent years.

But what does this mean for the actual practice of architecture? In the past, architects learned to design through the triad of the eye-mind-hand relationship, at a time when learning was primarily concerned with the development of new and practical techniques for design. However, this applied approach is no longer tenable on its own in a profession which has recently undergone such considerable expansion in its scope, requirements and – therefore ultimately – in its possibilities. Similarly, we can no longer concern ourselves purely with aesthetics. It is for some time now that aesthetics no longer carries the all-encompassing meaning it once enjoyed, neither in architecture nor in a wider cultural context. Moreover, in architecture today aesthetics is linked to a healthy form of provocation, with the architect now in a position to reference other creative disciplines, such as art, fashion, literature etc.

By the same token, the scope of the profession has in recent years also expanded considerably in terms of its functional responsibilities and requirements. In contemporary practice we are concerned – now more than ever – with the utility of space, with efficiency models, with the importance of incorporating sustainable constructive elements and with global and economic constraints and considerations. This augmentation of what is required from the contemporary practice of architecture means that architects today need not only to resolve complex structural relationships, but are also called upon to find a cohesive integration of variables. A building can no longer simply be approached as a purely autonomous entity or the sum of disparate elements merely in terms of a grid, a façade or as an iconic 'image'. Today's architect is in fact in a position to create an architecture



that is as integral and fully holistic as possible. In order to achieve this however, there is call for a multifaceted means of judgment, one that involves the synthesis of a broad spectrum of variables and one that is ultimately a dynamic method of evaluation that celebrates choice whilst being guided by experience.

DIGITAL DESIGN

We additionally live in a time where hard data is becoming increasingly ubiquitous and easily accessed. This not only affords the architect a vast source of readily available information, it has also enabled us to devise numerous computational tools with which to process data and apply explicit parameters in order to meet the requirements of precisely tailored designs.

Computational design has propelled the profession almost inestimably in recent years and has brought about vast changes to the practice of architecture. In particular there has been much excitement surrounding the adaptability of form enabled by the use of digital tools, and this continues to be the case today. However form-making is no longer tenable on its own in the context of an expanded architecture. It is essential that transformative computational processes enable a more intelligent architecture. Digital design as it is applied today is therefore – and is required to be – the result of adaptive processes.

Through engaging with all of the parameters contained in a project brief we are now in a position to give architecture a new expression. We can engage the computational to include and process data that is specifically related to parameters

garnered from multiple sources and to tailor this information to the specificities of the project at hand. What is of most importance, however, is the way in which this knowledge and data are combined in the parametric and the influence that this adaptive information has on all architectural ingredients: technical and constructional systems, spatial constructs, integrated sustainable solutions, programme organisation, materials and, of course, form making.

Considerable developments in design and production techniques have also been brought about by the application of knowledge garnered in analytical phases and the linking of this to technical data applied in later design stages. In a future that seemingly promises increased levels of available data and knowledge along with inevitable new tools to process this information, if we ourselves adapt accordingly, we will be in a position to create a more intelligent, responsible and performative architecture.

DESIGN KNOWLEDGE AND RESEARCH

However, if computational tools are to hold the responsibility of calculating and correctly proportioning vast amounts of relational information, they of course rely on the input of relevant data. So how does the practice of architecture set about acquiring this specific knowledge, and how does it organise itself to not only have vast stores of potentially relevant knowledge at hand, but also to generate and share this information? If we understand that knowledge generates further knowledge and that knowledge-sharing is essential for co-creation and innovation, then it is essential that today's architect puts systems in place that enable these mechanisms to operate as fluidly as possible. This I believe also re-

quires a shift in focus from approaching projects as singular endeavours with their own specific problems, to placing research in a position of key importance within the practice. By so doing, we create a serial effect within our work and witness a more efficient application of knowledge and a continual refinement and evolution of our design thinking and practice.

It must be added, however, that we do not and certainly should not limit ourselves merely to the research or knowledge that we ourselves undertake or generate. It is equally essential that we look outside of the profession for all that will assist us in optimising our work. We need to spread a wide net that captures relevant knowledge from a broad range of sources, from the sciences to the arts. We need to have in-depth knowledge of the social sciences, scientific innovations, even of new theories of time and space – in short, everything that is scientifically understood to affect the way we live and perceive the world around us.

At the same time we need to garner knowledge about the 'softer', more subjective side of human experience: art, music, literature, film – the list goes on. It is a big task, but in today's society it is also an essential one. If designers or architects are to fulfil a relevant role and continue to make a substantial contribution to how the physical world is experienced, then we need to continue to build on existing knowledge from the past, whilst thoroughly researching and engaging our design thinking with all aspects of how we live our lives today.

APPLYING KNOWLEDGE IN PRACTICE

So what happens when we reach a point where we have data, we have knowledge and we have external references from multiple and varied sources? What happens when we are fortunate enough also to have the digital tools to process and adapt this information to an exacting level of precision throughout all design iterations and adaptations and which can communicate all changes at the blink of an eye to all actors involved?

I propose that what is then required of the architect is an extremely strict editing process – because lest we forget, we also have a design brief, financial constraints, environmental concerns, contextual and typological considerations; in short, the basic ingredients of any project. But it is to this mix that the designer is required to provide 'added value'. It is here that the architect can apply a trained form of judgement and choose to incorporate only the most cogent ideas and concepts in order to arrive at a design that fulfils all requirements on a pragmatic and functional level, whilst additionally incorporating spatial constructs and experiential effects that determine how the building is ultimately perceived and experienced by the user.

Here - in a seeming contradiction to what may appear to have been suggested above – I believe that it is in fact imper-

ative to be reductive in our approach and limit ourselves to a small number of key details in our designs, to 'big details'.

Whilst it is essential to garner all the knowledge possible during the research of projects, it is equally essential to integrally incorporate multiple functions and effects as efficiently as possible into the final design. We must not make the mistake of interpreting expansion to mean that architecture becomes overly complicated, intricate or laden with excessive detailing. Instead we have to be ruthless but innovative in our editing and assimilating processes and incorporate multiple architectural ingredients into a small number of large, integral gestures. By so doing, we can create a form of multilayered efficiency that, although seemingly simple, in fact requires a highly complex degree of design thinking and decision making.

The void is perhaps a pertinent example of a big detail that holds significant potential to incorporate and influence multiple facets within architecture, but which to date has for the most part only been acknowledged for its capacity to affect an experiential response. The interior architectural void is of course, in its most literal sense, an empty space devoid of matter; a vacant, hollow vertical expanse, if you will. However, if we instead approach the void as a very present and essential 'negative' space, much like in a painting, then the void can in fact be appropriated and serve to define and compose all that surrounds it. With such an interpretation, architects can utilise the void to its full capacity and discover its potential as a device for the management of numerous essential concepts and fully integrated organisational solutions within buildings. In terms of organisation, the void can be designed not only to manage the infrastructure, routing, circulation, view corridors, interior climate and crowd control, but can also determine the massing, load-bearing and even exert its influence on the façade design. In addition of course, the void can influence perceptions of scale; it can create double readings and in so doing, it can encourage the desire for further discovery. In short, essential elements of buildings can be brought together and integrally managed by this one large yet seeming "empty" detail.

THE 'SOFTER' SIDE OF THE PROFESSION

As alluded to above, design thinking cannot be carried out purely by rationally biased or computational thought processes alone, as this would introduce a one-dimensional method of communication towards the user. If the goal of design, beyond the purely pragmatic, is to guide how the work will be perceived and experienced by the end-user, the architect has to assimilate and synthesise the abstract and the figurative within the design process in order to create buildings that are operative on multiple experiential levels.

Throughout history the subtle but conscious (or semi-conscious) exploitation of visual perception was for the most part the prerogative of the artist. If the objective of a work of art is primarily to communicate, then the artist must possess a cer-



'TRANSPARÈNCIA NIPONA'
The Fundació Mies van der Rohe presents the installation by Kazuyo Sejima and Ryue Nishizawa (SANAA)

BEATRIZ COLOMINA

OUT-MIESING MIES: SANAA IN THE BARCELONA PAVILION

'We decided to use acrylic to make transparent curtains. We imagined an installation design that leaves the existing space of the *Barcelona Pavilion* undisturbed. The acrylic curtain stands freely on the floor and is shaped in a calm spiral. The curtain softly encompasses the spaces within the pavilion and creates a new atmosphere. The view through the acrylic will be something different from the original with soft reflections slightly distorting the pavilion.'

(SANAA, 2008)

SANAA in the Barcelona Pavilion. The ultimate encounter, since SANAA is widely considered the inheritor of Miesian transparency — 'a challenge', as Sejima admitted in an interview — a return to the scene of the crime, one could argue. The installation carefully marks off a part of the pavilion with an acrylic curtain acting as a kind of crime scene tape, leaving as SANAA put it 'the existing space of the *Barcelona Pavilion* undisturbed.' And yet a completely new atmosphere was created.

But what crime has been committed here? What has been cordoned off? Is it the freestanding golden onyx wall at the center of the pavilion? Or the two Barcelona chairs for King Alfonso XIII and Queen Victoria Eugenia of Spain, where they were to sign the golden book during the building's opening ceremony? Or is it the space outside the spiral that has been marked off, preserved, 'undisturbed'? (Fig. 1 and 2)

In any case, the cordon is loose; the spiral is open. We can walk in, but not so easily. First we have to find the entrance, slide around the outside of the curtain. Only when we are in the other side, having squeezed between the acrylic curtain and the front glass wall of the pavilion, can we suddenly fold back into the spiral by making a 180 degree turn, which echoes the two 180 degree turns already required to enter the *Barcelona Pavilion*. Just as Mies narrowed the entrance down, subtly constraining the visitor with a folded path, SANAA spins and squeezes the visitor between the narrow planes of acrylic that curve around until suddenly one is inside, facing the two Barcelona chairs, or rather the chairs are facing us,

AAD

ADVANCED ARCHITECTURAL DESIGN

CHRISTIAN VEDDELER is an associate director/senior architect at UNStudio, Amsterdam, and guest professor at the Städelschule in Frankfurt where he is leading the master thesis specialisation, *Advanced Architectural Design* (AAD), with a focus on system thinking in architecture. His continuous involvement in academia includes frequent teaching assignments, amongst others at Harvard University, Delft University of Technology, the Berlage Institute and University of Illinois in Chicago.



CHRISTIAN VEDDELER

KNOWLEDGE FORMATION

'To achieve sustainable innovation you need to seek persistent disequilibrium. To seek persistent disequilibrium means that one must chase after disruption without succumbing to it, or retreating from it.'

(Kevin Kelly)¹

Recent digital developments in technological and social reality redefine conditions for communication, collaboration and production and open up the potential for extensive participation and diversity. At the same time, however, conditions of association, relativity and complexity are introduced. Here, open-source thinking seems to favour bottom-up strategies, while unconventional visionary leadership promotes the most flamboyant innovations. Consequently, for the global knowledge economy there exist on the one side keywords like 'collaboration', 'sharing', 'group intelligence', 'inter-/trans-disciplinary networks', 'self-organisation', and on the other, terms such as 'creative leadership' and 'inventive entrepreneurship', which together mark the arrival of a significant renewal of knowledge environments. While 'collaboration' as such obviously is not new, the scale, tools and intensity involved are.

knowl·edge

noun

1. acquaintance with facts, truths, or principles, as from study or investigation; general erudition: knowledge of many things.
2. familiarity or conversance, as with a particular subject or branch of learning: A knowledge of accounting was necessary for the job.
3. acquaintance or familiarity gained by sight, experience, or report: a knowledge of human nature.
4. the fact or state of knowing; the perception of fact or truth; clear and certain mental apprehension.
5. awareness, as of a fact or circumstance: He had knowledge of her good fortune.²

These new conditions challenge educational systems, in particular their working-, learning- and research-environments – in short, their 'knowledge spaces', as formal hierarchies and bureaucratic superstructures seem to vanish. The focus lies on intellectual initiative, rather than physical production, and challenges current generations of students, scholars and 'knowledge participants' to position themselves

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Series Editor: Johan Bettum

Issue Editor: Johan Bettum

Executive Editor: Sylvia Fadenhecht

Editorial office: SAC-Städelschule
Dürerstrasse 10, D-60596 Frankfurt am Main, Germany
Tel +49 (0) 69 60500869, architecture@staedelschule.de

Design and Layout: Jacqueline Jurt

Image Editor: Jacqueline Jurt

Layout and Compilation: Ayax Garcia Abreu, Matthias Behrmann,
Sujata Chitlangia, Amin Eivani, Sabina Eivazova, Harald Pridgar,
Sophia Passberger and Vasily Sitnikov

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info@spurbuch.de, www.spurbuch.de

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A NEW MANIFOLD, the inaugural issue of SAC JOURNAL, addresses the increased specialisation and possible fragmentation of expertise within architecture. Whilst historically always an amalgam of numerous forms of input, architecture is currently facing the necessity to assimilate and process hitherto unknown amounts and rates of information flow. How can architecture relate to the emerging forms of specialisation within the discipline - not the least in its pedagogy and academic programmes? The issue uses the academic programme of the Städelschule Architecture Class to reflect on these questions. The work presented comprises the finalists for the AIV Master Thesis Prize 2013.

Contributors to SAC JOURNAL No. 1 - A New Manifold include Beatriz Colomina, Ben van Berkel, Mirco Becker, Christian Veddeler, and Johan Bettum.

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