Synaesthesia and Kinaesthetics: An Introduction

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Synaesthetic experience and kinaesthetics, the experience of the posture and the movement of the body, are key concepts in the understanding of the interplay between the habitus of the organism and its habitat. Both denote synthetic achievements of the sensing human organism. As Maurice Merleau-Ponty famously noted: "[s]ynaesthetic perception is the rule, and we are unaware of it only because scientific knowledge shifts the centre of gravity of experience, so that we have unlearned how to see, hear, and generally speaking feel […]."[1] The original unity in sense perception, in his view, was grounded in the living body constituting a 'système synergique' linked together in the action of being in the world and thus constituting the kinaesthetically experienced 'lived body' of the embodied subject.

Habitus in habitat

The present third volume of the series *Habitus in Habitat* does not just address synaesthesia and kinaesthetics from the point of view of the organism or a psychologically and phenomenologically construed philosophy of perception and the knowledge that this perspective brings. It also aims at an understanding of the several interfaces of habitat and experience. A theoretical approach that intends to include the sensually and emotionally charged environment (i.e. what it affords, what it offers and the interaction it enables) brings into view artistic, cultural, and social renderings of synaesthetic and kinaesthetic phenomena. It is the very habitus of the human organism to engage, to share, to express itself, and by following this habitus it creates a social and cultural habitat. This habitat, the social structures and urban patterns of cities, the complex unfoldings of artworks, the sensual environment of everyday life, all mark elements of synthesis which can be enlightened by theories of organismic capabilities, but also mark phenomena in their own right. The knowledge embedded in these ways of differentiating and combining modalities and the ways of making their interplay explicit in multimodal artworks and kinaesthetic artistic practices, transforms our

[1] Merleau-Ponty: *Phenomonology of Perception*, p. 229.

experiences in various ways and calls for specific scientific and intellectual means to bring this specific knowledge into view. The *Habitus in Habitat* project aims to take both the specific ways of constructing this habitat and its very properties as well as the theories concerned with the engaging organism and its habitus into focus without committing the error of unheedingly foregrounding only one of these two intrinsically intertwined aspects.[2]

This only recently has come to be appreciated within the growing field of the cognitive sciences and has found expression in their recognition of the need for a new science of the mind which takes the embodied, embedded, enactive, extended and affective subject seriously, as has been proposed in the philosophy of the embodied mind.[3] For example, in philosophy itself, this approach has been put to work in understanding social and political phenomena by bringing together social constructivism and biological foundations, the social and the somatic.[4] This alternative picture of the human mind distances itself from the methodological solipsism and the strict boundaries of the neuroscientific disciplines that investigate local phenomena and generalize about the human mind and nature based on these findings. No comprehensive theory of mind and human practice can evolve by turning away from the embeddedness of its results in the wider biological, social or cultural settings. The social sciences, political theory, art history, media theory, and film studies – among many others – also have to be taken into account. It is fair to say that the very disciplines just mentioned have already gained in influence (as the limitations of a too narrowly construed biological theory have become manifest) and nowadays are seen more and more as what they are and always have been: congruent theories of human nature. As such they restore insight into humans as bio-cultural beings and correct the shortcomings of some neurobiology and its view of the 'naked brain' as the single explanans. In taking the more comprehensive stance, the boundaries of the sciences are becoming more and more permeable, though not without keeping the methodological principles of the respective disciplines intact. Those principles sometimes even are more fully explicated when adjacent theoretical achievements of different disciplines are compared and differentiated. The present volume of *Habitus in Habitat* follows such a line of thought with its trans-disciplinary endeavour to explore *synaesthesia and kinaesthetics*.

2 For a more detailed discussion of the phenomena, foundational texts and methodological considerations underlying the *Habitus in Habitat* series see the "Introduction" in: Flach/Margulis/Soeffner: *Habitus in Habitat I*, pp. 7-15.

3 See Rowlands: *The New Science of the Mind: From Extended Mind to Embodied Phenomenology.*

4 For such an approach and an introduction to what has been labelled the '4EA' view of cognition see: Protevi: *Political Affect.*

Synaesthesia

Two general uses of the concept of synaesthesia can be separated. There is the rather liberal use of the word 'synaesthesia' that also figures in some of the contributions to the present volume, as the idea of a fusion of the senses in experience, art or metaphoric language. Also in the philosophy of perception there has been a focus on cross-modal influences and integrative or binding effects in normal perception. Following Merleau-Ponty's use of the term, synaesthesia can be seen as the standard form of perception, and the synaesthetic kind of cross-modal integration thus constitutes the most basic form of our meaningful, value-laden engagement with the world. These approaches deal with synaesthesia as a, so to speak, productive phenomenon that makes valuable contributions to our cognitive lives and every-day experiences, but is also brought to bear and directly addressed in the experience of art.

There is also a more narrow use of the term that describes a specific neuronal condition that has been named 'genuine perceptual synaesthesia'. Narrowly defined, genuine synaesthesia is a condition in which stimulation in one sensory modality (or sensory aspect) systematically and automatically leads to experiences in a different modality (or sensory aspect). The graphem→color synaesthesia is by far the most common form, in which e.g. a specific letter or number reliably and involuntarily triggers a specific colour response.

In 1880, in an article published in the journal *Nature,* Sir Francis Galton systematically described this condition for the first time, hence making it available to a broader scientific community. Research done in Germany and especially in Hamburg in the 1920s and early 1930s can be regarded as the heyday of synaesthetic research, particularly because its achievements were made possible by the collective efforts of a transdisciplinary endeavour, sustaining a level of intellectual interaction and discourse that has yet to be reached since. At the time, experimental psychologists, neurologists, musicologists, artists, and philosophers engaged in an intense and extensive dialogue on synaesthesia and related phenomena, developing a comprehensive account of it as a biological and artistic phenomenon.[5] Over the past twenty years, synaesthesia has regained a lot of interest, which is to a large extent due to the monographs of Richard E. Cytowic and the research conducted in cognitive neurosciences on this condition – research which combined phenomenological, behavioral, and neuroimaging methods and has begun to identify parts of the cognitive and neural basis of synaesthesia.[6]

[5] See e.g. Rösch: "Albrecht Wellek. Synästhesie als kulturbildendes Phänomen", Lewanski: "Die neue Synthese des Geistes. Zur Synästhesie-Euphorie der Jahre 1925 bis 1933". For the interaction of experimental psychologist Heinz Werner, neurologist Kurt Goldstein and the philosopher Ernst Cassirer see Krois: "Synaesthesia and the Theory of Signs", pp. 155-159.

[6] Cf. Cytowic: *Synesthesia: A Union of the Senses,* the first edition of which was published in

In contrast to other neuropsychological conditions, synaesthesia does not primarily represent a cognitive breakdown or a pathology and thus does not constitute an impaired subjective state. It is rather a positive symptom, sometimes opening up a rich phenomenal world for the subjects of this condition that does not seem to be available for non-synaesthetes. This makes synaesthesia a specifically interesting phenomenon for the scientific study of differences among subjects, though one that is hard to gain access to and that forces us to embrace the otherness of our conspecifics within the scientific paradigm. All types of the condition of genuine synaesthesia share common features that are used in tests of authenticity and make synaesthesia distinguishable from comparable phenomena, like cross-modal interactions in non-synaesthetes. Without going into detail here,[7] it is worth looking into three of these features that make synaesthesia such an interesting phenomenon and that also relate synaesthetic experience to elements that have been considered throughout the *Habitus in Habitat* series like emotions and imaginations.

One important feature in this respect is that genuine synaesthetic experience is in many cases loaded with affect and strongly related to emotional states. This would suggest that research into synaesthesia might also shed light on the highly interesting field of the 'emotional brain', which in recent years has taken evolutionary more basic brain structures and their contributions to emotional, sensory and even homeostatic experiences into their focus.[8] This same interest in emotion is also one key aspect of the philosophy and science of the embodied mind, in the sense that it is becoming more and more clear and empirically trackable in what profound ways emotional and bodily mediated processes underlie and inform our decision-making and even constitute our most abstract thoughts and ideas. Thus in tying together sensory experience and emotion, synaesthesia might open up new paths for research that were not yet envisioned.

The second interesting feature of synaesthetic experience is its phenomenal specificity. As already Galton has noted in 1883, colour synaesthetes "are never satisfied, for instance, with saying 'blue', but will take a great deal of trouble to express or match the particular blue they mean."[9] This taken together with the third feature, 'idiosyncrasy' (no two synaesthetes seem to have the same

1989. See also his most recent book: Cytowic/Eagleman: *Wednesday Is Indigo Blue: Discovering the Brain of Synesthesia*. Both give a comprehensive overview of phenomena and theories of genuine perceptual synaesthesia and related phenomena as well. For an overview with a focus on recent findings in the neurosciences see also: Ward/Mattingley: "Synaesthesia: An Overview of Contemporary Findings and Controversies".

7 But see Cytowic/Eagleman: *Wednesday Is Indigo Blue*, pp. 47-56 and the 'test of genuineness' proposed in Baron-Cohen et al.: "Hearing Words and Seeing Colours: An Experimental Investigation of a Case of Synaesthesia".

8 For such approaches to emotionality cf. Panksepp: *Affective Neuroscience;* Damasio: *Self Comes to Mind.* The 'emotional loop' involved in synaesthesia figures prominently in Hinderk Emrichs approach, see e.g. his: "Synästhesie als 'Hyper-binding'".

9 Galton: *Inquiries Into Human Faculty and Its Development,* p. 107.

'matching' between elements in the trigger domain and the elements in the response domain), makes this condition extremely interesting for related questions of how to approach experiences of other minds and the qualitative feels of their mental lifes. This line of thought and the awareness of the problem of how to gain access to the mental states of others that seem to differ in such an extensive way has been prevalent from the beginning of research into synaesthesia and has led to a specific sensitivity towards the idiosyncrasy of the experiences of synaesthetic subjects: "The psychologist should inquire into the minds of others as he should into those of animals of different races, and be prepared to find instances of much to which his own experience can afford little, if any, clue."[10]

It might have been these three features in conjunction with the renewed scientific interest in phenomenal consciousness, the realm of private, subjective experience, which has led to an increase in research and attention given to the field of synaesthesia in recent years. But beyond these rather general points, synaesthesia has also become an explanatory feature in theories of aesthetic responses and the highly interesting, though also highly problematic, field of neuroaesthetics via the element of transfer in metaphor. This has been investigated by Vilayanur S. Ramachandran, who argued that to a certain extent, we are all synaesthetes since we are immediately able to understand notions like 'sharp cheese' or that of a 'dark tone'. He accordingly uses synaesthetic capabilities as a stirrup for what he calls the synaesthetic 'bootstrapping theory of language origins' and implements the transfers enabled by synaesthesia into his neurological theory of art.[11]

Kinaesthetics

Kinaesthetics have also figured prominently, albeit for an arguably longer time period, in theories of aesthetic responses to artworks. In his *Prolegomena to a Psychology of Architecture* from 1886, Heinrich Wölfflin argued (already reviewing an existing literature on the topic and esp. citing Robert Vischer's notion of 'Einfühlung') that every physical form possesses a character only because we possess a body through which we engage with forms and structures in the environment. He used this insight to answer his main question: "[h]ow is it possible that architectural forms are able to express an emotion or a mood?"[12] In

10 Galton: "Visualised Numerals", p. 85.

11 Cf. Ramachandran/Hubbard: "Synaesthesia - A Window Into Perception, Thought and Language", and Ramachandran/Hirstein. "The Science of Art: A Neurological Theory of Aesthetic Experience", for the passages on metaphor see pp. 30-32.

12 Cited from Mallgrave: *Modern Architectural Theory*, p. 199.

this way, he brings bodily sense, kinaesthesia and empathy together in the immediate emotional appreciation of art works and form elements even beyond architecture – theoretical elements that have been picked up in recent debates on the role of embodied, emotional underpinnings of aesthetic experience.[13] The link between kinaesthetics and emotions can be made palpable by looking at the fundamental role both play in the interaction with the world – but what might be the specific kind of sensing that is constituted by kinaesthesia?

As the ecological psychologist James Gibson noted, what had traditionally been called the 'five senses' and their respective modality-specific feels did not hold up in any of the psychology textbooks of his time (the early 1960s), in which from 6 to 12 senses were mentioned. He himself refrained from the futile task of separating senses based on modes of conscious qualities and focused instead on the modes of activity which different perceptual systems enable human beings to engage in. He found five such 'systems' of interaction, five external senses (he combined taste and smell and added the vestibular system as basic orientation mode). What he referred to as kinaesthetics is even more fundamental and important and therefore has not been entrusted to just one group of sensory perceptors but "cuts across the functional perceptual system."[14] With its focus on the outward-reaching abilities of the organism and in accordance with a theory of direct perception of environmental 'affordances' (i.e. offerings of the surroundings like e.g. a tree being perceived as 'climb-able' by a squirrel) Gibson's notion is particularly interesting for questions regarding the specific interplay between habitus and habitat. It should be included in the debate alongside related questions, for example those related to 'motor intentionality' that have been mostly derived from the phenomenological tradition, e.g. following Merleau-Ponty or Edmund Husserl.

Husserl's treatment of the relation between kinaesthesia and perception, e.g. in his 1907 lectures on *Thing and Space*, also deserves mention. He describes the interdependence between the kinaesthetic experience and perceptual consciousness in a way that foreshadows current sensorimotor approaches to experience.[15] It is only through the kinaesthetic system and the movement of the whole body that perceptual disclosure of the world is constituted, putting the focus on the active body which guarantees the unity of experience but often recedes from experience in favour of the world. Especially in the phenomenologically informed philosophy and science of the embodied mind,

[13] See e.g. the contemporary debate on that topic that started with the paper by Freedberg/Gallese: "Motion, Emotion and Empathy in Esthetic Experience", see for a short review and an enactive reading of their theory Gallagher: "Aesthetics and Kinaesthetics".

[14] Gibson: *The Senses Considered As Perceptual Systems*, p. 111.

[15] In Husserl's terms perception is 'kinaesthetically motiviated;' see the chapters including this notion in *Thing and Space*. For a detailed outline of a more recent kinaesthetic approach to visual consciousness that is informed by cognitive science see O'Regan/Noë: "A Sensorimotor Account of Vision and Visual Consciousness".

there are ongoing debates over the question whether the concept of kinaesthetics should include the conscious awareness of the body parts and their movement or just their subpersonal tracking.[16] This relates to questions of how kinaesthesia should be defined and specified with regards to proprioception or e.g. the somato-sensory cortex and other comparable systems. For the purpose of the present volume of the *Habitus in Habitat* series, a useful definition but one that is still too unspecific for the questions just introduced would conceive of kinaesthetics along the following lines: kinaesthesia is not the perception of the body as an object; instead it pragmatically defines the body in its activities and as the center of interaction. It is through this proprioceptive awareness that the human subject is able to navigate its environment. In this sense kinaesthetic experience is also directly and prominently situated at the very interface of habitus and habitat.

The various ways in which the moving body constitutes and shapes our conscious experience of the world is thus only one part of the story to be told. How social or cultural scaffolding and artistic practice evolve and unfold, and how they might impress themselves on the human body, constitutes a fascinating question. It was again Wölfflin who anticipated this line of thought, although shying away from its execution: "Whether it is the physical history of the human body which determines the forms of architecture *or* whether this body is determined by them, is a question that goes beyond what we are willing to discuss here."[17] As far-fetched as such questions seem to be, they lie at the heart of understanding the various interrelations and constraints between habitus and habitat, of engaging and being embedded in a richly structured cultural world.

The essays

Synaesthesia, bringing into focus the complex, rich phenomenal life of the subject, and kinaesthetics, mediating the environment with the personal coordination and emotive system, play a key role in understanding our peculiar relation to the natural as well as cultural environment. An extended discussion of these phenomena will help us to gain a deeper understanding of both our engaging habitus, and the structuring and structure of the habitat.

16 Cf. Gallagher: *How the Body Shapes the Mind,* for an overview of debates related to the questions raised in this paragraph, with a specific focus on the role of 'body image' and 'body schema' in these debates.

17 Cf. Wölfflin: *Prolegomena*, p. 28: "Ob aber nun die physische Geschichte des menschlichen Körpers die Formen der Architektur bedingt oder von ihr bedingt ist, das ist eine Frage, die weiter führt, als wir hier zu gehn beabsichtigen." Translation into English by the author.

The first part of this volume investigates the *Phenomenologies of Synaesthesia* and kinaesthetics as an integrative ground for perception and embodied activity. Caroline Jones, in her opening essay, shows how those two phenomena merge into a sixth sense, a sense of the viscera – a unification and an enhancement of the senses at the same time – and argues that it could be claimed with some right that they give contemporary art its 'Urgrund' and object. The story to be told here is one of a shift from 'aesthetic experience' to the 'aesthetics of experience' exemplified by contemporary works of art which set themselves against the bureaucracies of the senses. That is: in opposition to the 20th century modernisms' emphasis on form, the work of the artist includes and transforms the art-goer who is engaged and embodied. Hinderk Emrich's insightful thoughts about the 'world of synaesthesia' start off with the question of how constructivity and perceptuality fit together. Emrich argues that the interaction of 'bottom-up' and 'top-down' processes with a 'ratiomorphous apparatus' plays a key role in synaesthesia – and he concludes that the oscillation between different types of synthesis and analysis are crucial for both synaesthetic experiencing and a broader phenomenology of human perception. In an approach, informed by contemporary theories of phenomenology and embodiment as well as by practical and artistic knowledge, Gabriele Brandstetter dedicates her essay to the phenomenon of 'listening' in contact improvisation. Listening, here, is not limited to the auditory sense, but it is rather a 'metaphor we live by', referring to a broader sense of kinaesthetic awareness, which – as the metaphor indicates – is synaesthetic in essence. On this basis Brandstetter develops a theory of how the phenomenologies of attention relate to those of kinaesthetics, how kinaesthetic sensuality is shared in space and – furthermore – brings forth its own spatiality, and how listening – in the broad sense of the word – reaches the synaesthetic-kinaesthetic quality of 'being moved' in both the emotional and the sensual meaning of the word.

The second part, *Feeling and Cognition*, approaches synaesthesia by focusing on theories of art and by looking at the elements of disruption and unification with respect to visuality in these theories. Sabine Flach's chapter is dedicated to the question of art experience as a profoundly synaesthetic and kinaesthetic phenomenon. With reference to the involvement of the whole body, its motion, its sensuality and its emotionality on the one hand and to subjective experience on the other, she develops a theory of both visuality and imagination based on a concept of 'images in agitation', closely related to the interaction of habitus and habitat. This approach to visual arts (but not only to those) is then exemplified with a study on Olafur Eliasson, which concludes her essay. In his close reading of Gilles Deleuze's *Francis Bacon. The Logic of Sensation* Sven Spieker investigates the different strategies of de-centering and de-stabilizing vision and the eye. Since Bacon tries to paint the sensation and not what is sensational, he – according to Deleuze – directly tackles invisible and

deformative forces in order to liberate the eye and give it a pure presence and, in a sense, its own body.

The third part, *Framing Synaesthesia*, combines three approaches that specify synaesthesia by relating it to adjacent phenomena. The three papers follow the questions of how synaesthesia can be integrated into a general theory of perception, how it relates to other phenomena of binding, and how it is related to broader theories of mental imagery maintained in the 19th century. In his discussion of the research on colour-experiences in cases of 'genuine perceptual synaesthesia', Joerg Fingerhut discusses two challenges such cases might constitute for a theory of enactive perception. First, colour experiences in synaesthetic responses seem to track, not something in the world, but rather another experience within the perceiving subject. And second, genuine synaesthesia persists as a perceptual phenomenon without having a world-involving role. Each of these claims challenges the enactivist assumption that the human mind and brain is in a strong sense determined by interactions with the world and is in this sense supposed to be extremly plastic. Enactivism, he argues, has to reflect on the time-scales in the explanations it uses and has to emphasize a normative element in order to deal with limiting cases as synaesthesia. Paul Cumming's contribution follows the question of what kind of perturbation of sensory channels synaesthesia consists of. He treats synaesthesia as a special case of binding and reviews several neurobiological and psychological studies dealing with phenomena of integration within the human brain. In contrast to cases like Parkinson's disease or schizophrenia, in which binding fails in certain respects, he argues that synaesthesia constitutes a case of excessive binding related to insufficiently pruned connectivity between neuronal pathways. Karl Clausberg, in his essay, goes beyond the phenomenology of genuine perceptual synaesthesia and shows that in the 19th century, the binaries which are at work for example in cases like graphem→colour synaesthesia would have been treated only as second order or derived forms of a more general variety of mental imagery. He follows the lead of Ernst Kapp's concept of 'organ-projection' and Karl Bühler's 'deictic fields' and brings those ideas to bear in a fascinating interpretation of scrolled voices in medieval art works that constitute synaesthetic gestures of sound and writing. Clausberg relates his insights to the contemporary discussions of the 'extended mind', thereby giving this debate a historical underpinning.

Both synaesthesia and kinaesthetics are intrinsically connected to questions of *Spatialities*, to which the fourth part of this volume is dedicated. In a broad and insightful approach including phenomenology, semiology and research on synaesthesia, Heinz Paetzold argues for a synaesthetic approach to atmospheric phenomena. In dedicating his study to 'flânerie' and to the kinaesthetics of the 'rhythm' of cities, he takes up concepts of both habitus and habitat in order to integrate them into a broader concept of atmospherical synaesthesia as a kind of 'symbolic pregnance' (in Ernst Cassirer's meaning of the word). A cinematic approach to synaesthesia – based on a broad understanding of sensuality and

what Cretien van Campen calls 'The Hidden Sense' – is then put forth by Robin Curtis' rich text on filmic ways of modeling spatial kinesis and visual abstraction. Curtis exposes a new approach to sensual engagement with images in motion by relating them to recent psychological concepts such as 'immersion' and 'presence', but most of all in offering a highly insightful discussion of the concept of 'Einfühlung' (in the tradition of Robert Vischer and Theodor Lipps). Isabelle Moffat, in her contribution, offers an analysis of the role 'hermeneutic effort' can play in Jackson Pollock and Cy Twombly. Neatly re-tracing and criticizing Clement Greenberg's approach to Pollock's diverging ways of confronting the 'madeness' of art works and the kinesis of the artist's stroke, she offers an alternative understanding, pointing to the question of self-expression, or, more precisely, of "how to continue as an artist after painterly gesture had become a sign, a trope in the Abstract Expressionist vocabulary." This question, she argues, becomes very prominent in Cy Twombly's divergent approach, whose artistic practice is explicitly set against the illusion of pure self-expression.

The three papers assembled under the title *Modernities* shed some light on paradigmatic figurations of modern aesthetics and literature as well as modern media formats and theory. In his essay Gerhard Scharbert follows the visions of a cosmic, synaesthetic body in the thoughts and writings of Charles Baudelaire and Arthur Rimbaud. By laying out possible influences of the theories of his time concerning the psychological effects of drugs and physiological treatises of the nervous system, he draws a comparison to similar effects in music – an element which would influence Baudelaire through his exposure to the works of Richard Wagner. This essay provides a sense of the rich knowledge and artistic renderings concerning synaesthesia in the late 19th century. Jan Söffner dedicates his contribution to Rainer Maria Rilke's work. He argues that especially the *Sonnets to Orpheus* were shaped by a poetics of *synaesthesia* as opposed to, but at the same time intrinsically linked with, *referential* concepts of meaning. In discussing the *Sonnets to Orpheus*, he argues for a poetics of immediacy beyond the problem of referential meaning. Rilke's poems are, in his view, as much about the 'synaesthesias of reading' as they are about its 'allegories'. In a media-archeological approach, Wolfgang Ernst's rich paper looks at the divergent temporalities of synaesthesia. In exposing the asynchronies of sensory and technical channels, of neuronal and technical signal processing and the generative codes implied in these processes, Ernst offers an overview of the 'temporal gaps' in the integration of the modality of senses. By taking temporal sense to be at the core of these questions, his chapter succeeds in integrating the history of science with phenomenological, technical, and media-theoretical elements that are implied by the phenomenon of synaesthesia.

The volume closes with two interventions on the discourse about synaesthesia and kinaesthetics, focusing on the *Arts of Synaesthesia*. Two artists express their view of synaesthetic experiences and their importance for artistic

phenomena. Ditte Lyngkær Pedersen's reflects on synaesthesia as a special form and method of artistic exploration of the senses. In explaining her own works and projects, she clarifies how a different, creative and open exploration of synaesthetic phenomena can lead to a deeper understanding of human senses. The volume ends with an interview of Kate Hollett (conducted by Sabine Flach and Jan Söffner) in which she explains her work 'Mind Chatter', which she also presented during the conference underlying this volume: a work profoundly concerned with the intermodal aspects of mental activity.

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Sabine Flach, Jan Soeffner and Joerg Fingerhut

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