Rainer Guldin

Colorarium.

The Exchange of Letters between Vilém Flusser, Karl Gerstner, Philippe Henry and Gottfried Jäger

> "[Our] cooperation did not reach an end – and probably it would never have; the goal was too ambitious. But at least it has led to a first concrete model, the 'Colorarium' […] a representation of the universe of colours, in the form of a crystal lattice to be used as an instrument. The nodes were the single colours and would have been generated electronically in the form of light. Processes from all areas of science, business and technology could have been played on it. Flusser wrote a scenario: the rise and fall of the Roman empire, in colours. […] But we had bigger plans: a monument like the 'Géode' in Paris, with audiences surrounded by colours."
>
> Karl Gerstner

This essay is about the friendship and collaboration between Vilém Flusser, Karl Gerstner, Philippe Henry, and Gottfried Jäger and the way it influenced the project of the House of Colour in São Paulo between 1987 and 1989. In this period, Flusser exchanged numerous letters and texts with his three correspondents, continuously re-elaborating and expanding his ideas about colour in general and their specific role in the project. The exchange was a colourful multilingual communication process. Flusser used English, German and Portuguese interspersed with French. Gerstner wrote his texts in German and English, Henry used Portuguese and French and Jäger German. To preserve at least in part the plurilingual nature of these exchanges I have generally quoted from the original adding the translations to the text or putting them in footnotes. The most important parts of the three letter exchanges, as well as Flusser's, Gerstner's and Henry's texts and the transcriptions of Flusser's conferences and video interviews have been published in this issue to allow the reader to reach a broader understanding of the depth and complexity of these multiple exchanges. For obvious reasons, the present essay cannot provide a detailed reading of all these texts but only a first overview. It is to be hoped that this might inspire further research.

The plurality of idioms is echoed in the use of different media. Besides forms of written communication (letters, essays, telegrams), a few video interviews were done in Robion, which were viewed and commented upon in Brazil. Henry then conveyed Flusser the questions by telephone and Flusser reacted in written form. Gerstner and Flusser wrote several texts together. Flusser travelled three times to Brazil, visited Gerstner in Basel and Hippoltskirch and Jäger in Bielefeld. Both Gerstner and Jäger came to see him in Robion. Henry travelled several times to

Robion and met Gerstner and Jäger in Europe. All this ensured a constant flow of back-and-forth information within the small network of friends. For further information and a more personal take on the events summarized here see the interview with Philippe Henry in this issue of *Flusser Studies*.

Each of the three conversation partners contributed his own perspective that Flusser adopted and adapted integrating it into his own thinking. In his letters, Flusser kept obsessively coming back to aspects that he had already previously discussed with one of the other interlocutors, often with a slight twist. As in his practice of self-translation Flusser's thinking evolves through a combination of repetition and innovation. However, if one reads all the texts to the different interlocutors together, as I have done here, one cannot escape a feeling of being overfed at times as repetition clearly supersedes innovation. But then the different interlocutors did not know the letters Flusser had sent to the others. For each of them Flusser's argumentation must have seemed new and inspiring.

This intense intellectual dialogue and the friendship between the four people involved in the exchange is a specifically Flusserian strategy based on a relentless but stimulating way of keeping the conversation and collaboration going. As Andreas Müller-Pohle described it, Flusser had a way of sending letters and texts, calling the recipient only a couple of days later demanding a reaction. In this sense, this essay can also be viewed as a case story of the way Flusser developed his thinking and writing through a dialogue with others and with himself.

In 1988 and 1989, Flusser travelled altogether three times to São Paulo: February 7 to 17, 1988, August 5 to 19, 1988 and August 15 to 26, 1989. This corresponds to the three main phases of the project of the House of Colour. From the very beginning, the project attracted a lot of interest and expectations were high, possibly also because of its international dimension. All three events met with a strong echo in the Brazilian press.

In a short note published in "Diário de comercio" on February 6-8, 1988, the first meeting of the project of the House of Colour was briefly announced. On February 10, 24 participants, among them Vilém Flusser and Jean Maurice Simoneau, were going to meet in the restaurant Massimo da Aladema Santos to discuss the influence of colour in different areas of society. The project was financed with 450.000 US dollars by the Brazilian company Glasurit of the Grupo BASF. Both Glasurit and BASF had a concrete economic interest as they were engaged in the industrial production of dyes and coatings. In the course of the project, this economic and financial dimension became more and more important and ultimately led to the demise of project by the end of 1989.[1]

The second phase of the conference (August 10 and 11, 1988) was held at the Centro do Professorado Paulista (Avenida Liberdade 928) and attracted an audience of around 800 people. It

[1] Further comments appeared in "O estado de São Paulo" (5.2.88), "Diário popular" (8.2.1988), "Folha da tarde" (11.2.1988), "Journal da tarde" (11.2.1988), "A notícia" (13.2.88) and "O Globo" (17.2.88).

was introduced by Heinz Wollenwerber (president of the BASF Group) and the main organizer Philippe Henry – writer, multimedia researcher and producer – who stressed the importance of an interdisciplinary approach by participants from different nations. The first speakers were the French colour theorist Jean Maurice Simoneau who talked about colour in the consumer market and the French architect Jean Nouvel whose talk dealt with colourful architectonic structures. The French cultural attaché Jean Digne was also present. Other speakers were the Brazilian architect Sergio Bernardes, the Italian architect Alessandro Mendini, the Japanese stylist Yoshiki Hishynuma and Ira Schneider, a video artist from New York. Flusser spoke about the search of a colour code (August 10) and the idea of a House of Colour in São Paolo (August 11).[2]

The third phase took place on August 22 and 23, 1989. "Folha de São Paulo" (22.8.1989) published an article by Angela Marsiaj with the title "Debate discute informatiçacão no uso da cor" (The debate deals with informatics in the use of colour). The conference that run under the title "Da natureza à informatica" (From nature to informatics) was introduced by Heinz Wollenwerber and Philippe Henry. On the morning of the first day, the speakers were the American artist and biotechnologist Georges Gesser and Louis Bec and, in the afternoon, the Brazilian architect Fernando Peixoto and the French stylist Maude Perl. The second day began with speeches by Karl Gerstner on the colour of forms and Gottfried Jäger on autonomous colour. In the afternoon, the Japanese computer artist Yoichiro Kawaguchi spoke on computer-created morphogenetic images. Flusser presented the paper "Novas cores: Da natureza à informatica" (New Colours: From Nature to Informatics). The original title was "Imagens en cores" (Pictures in colours).[3] Gerstner presented a second speech on Günther Wyszecki's uniformed colour space as a proposal for a codification of colours. Armando Hauptmann and Philippe Henry closed the meeting.

In the interview "Um alfabeto de azuis e amarelos" (An alphabet of blues and yellows) published by the magazine "Superinteressante" in November 1988 (Flusser 1988b), that was translated into German by Edith Flusser (Flusser 1996)[4], Flusser discussed his theoretical position. He started out with the idea that spoken and written languages were inadequate to describe the world which could be described much better in mathematical terms. However, the problem with numbers is that they are separated from each other by intervals. The advantage of colours is that they can be manipulated with greatest precision and down to the smallest detail. Colours are separated from each other but at the same time they tend to blend into each other. If you start with the colour green and want to reach the colour blue, you do not have to move across a clear-cut border or any

[2] See "In search of a colour code" and "Why the House of Colour in São Paulo?" in this issue of *Flusser Studies*.
[3] See this issue of *Flusser Studies*.
[4] For the Portuguese version see this issue of *Flusser Studies*. In the German translation a mistake regarding the year of publication occurred which carried over into the introduction. The interview did not take place in 1986, "im Vorfeld" (Flusser 1996: 29), in the run up, to the project of the *Casa da Cor*, but after the second round of conferences in August 1988, most probably during Flusser's second stay in São Paulo.

intermediate space as you do with numbers, but you traverse a myriad of intermediate stations. "As a result of the great flexibility of the colour universe, we could, by means of a code, express the finest nuances of thought and feeling much better than any language could. Although words are very nuanced, they do not achieve the fineness of colours. There is much that can only be said with colours and not with words. […] You can't say with words what the root of minus two is but with colours you can express it with absolute accuracy." (Flusser 1996: 30) Computers do not only calculate but can also transform numbers into lines and surfaces. These are not black and white but coloured. "As with words, everything can also be said mathematically. First, we have an equation that is translated into computer language and then the computer generates a picture." (ibid.: 31) Colour adds a new dimension to Flusser' notion of the technical image and his conception of code evolution and links mathematics back to the visual dimension.[5] Flusser proposes to develop a denotative colour code, a kind of "Descartes in colour". (ibid.: 32) "Color will signify (*bedeuten*) numbers, but I don't know yet in what form. The problem is that numbers are not adapted to points, but to colours. Descartes' idea of how numerical thinking should be adapted to the *res extensa* in the world becomes a challenge to adapt numerical thinking to colours. […] Our world will be transformed in the same way it was transformed by photography and cinema." (ibid.: 32-3)

Karl Gerstner: Colour Forms

> "Colours only become colours once we have formed
> them in our consciousness – a process which is unfinished
> and probably will remain so forever."
>
> Karl Gerstner, Die Formen der Farben

Flusser was in São Paulo from February 18 to March 11, 1987, and participated with Milton Vargas in the 2nd Latin American Seminar on Alternatives for the teaching of the history of science and technology (February 24 to 26), organized in São Paulo by the Sociedade Brasileira de História da Ciencia. On this occasion he met Karl Gerstner.[6] On September 24 of the same year, Flusser wrote Gerstner the first of a series of letters.[7] Gerstner had probably visited Flusser in Robion in late summer or early fall of 1987 and brought some of his books along. Gerstner's original view of colour had an immediate impact on Flusser's thinking, especially the relationship of colour and form, which is also at the centre of Gerstner's vision of colour. "Nach Einblick in Ihre Farbbücher,

[5] See the last section of R. Guldin, Coloured technical images: On the Role of Colour in Vilém Flusser's Work in this issue of *Flusser Studies*.
[6] See M. Schwendener, Colourful Dialogue: Vilém Flusser, Karl Gerstner and the Casa da Corn in this issue of *Flusser Studies*.
[7] See the exchange of letters between Flusser and Gerstner in this issue of *Flusser Studies*.

(aber ohne sie bisher gelesen zu haben)", writes Flusser in a highly speculative mood, „hatte ich heute Nacht folgenden Gedankenfetzen, den ich festhalten möchte. Falls Farben Formen sind, (und nicht Formen haben), und daher falls Formen Farben sind, (nicht haben) […] Und falls 'Theorie' die Betrachtung der 'reinen' Formen ist, dann ist 'Farbtheorie' ein den eigenen Schwanz fressender Drache, ('Uroboros'), denn sie Farbbetrachtung der Farben. […] Und falls 'Formel' ein Diminutiv von 'Form' ist, dann ist das Gebäude aus Algorithmen und Theoremen, (die 'Wissenschaft'), ein pointillistisches Gepinsel ('Weltbild')."[8] In this vision, colours and forms, mathematics and art converge. Colours do not have a form but are forms in themselves and conversely shapes do not have colours but are identical to colours. If theory is the contemplation of pure forms, then colour theory is the contemplation of colours in colour. Science can be seen as is a pointillist painting, an ensemble of colour dots.

In *Die Formen der Farben*, Gerstner defines the relationship of colours and forms in slightly different terms. Form and colour do not merge but are seen as the two inseparable sides of the same phenomenon. Form is the body of colour and colour the soul of form. Each colour and each form have their own character. "Es gibt nicht nur eine Wechselwirkung zwischen den Farben einerseits und den Formen andererseits, sondern auch zwischen Farben und Formen. Keine Farbe ist ohne Form denkbar, und keine Form ohne Farbe. Umgekehrt kann jede Farbe in jeder Form, und jede Form in jeder Farben gedacht werden."[9] (Gerstner 1986: 8) In the Western tradition, colours were opposed to forms. Forms were defined as primary and colours as secondary. This notion, argues Gerstner, is obsolete. Colours and forms complement each other. Colours and forms are part of one continuous borderless system that Gerstner calls "das Farben-Formen-Kontinuum", the colour-form-continuum (ibid.: 11). His starting point is the opposition of blue and yellow, blue being the darkest full colour and yellow the brightest. Blue originates in black and yellow in white. Blue and yellow are mutually dependent and complement each other. They constitute the main axis. The other axis is the second opposition pair of red and green. The vertical/horizontal orientation of this model results in a series of "Color Forms" (ibid.: 128). At the end of chapter eight, Gerstner emphasizes that this model is not a fixed construction, but a variable structure. The model is "durch und durch spekulativ, und einzig zu dem Zweck entstanden, mir selbst etwas Einsicht zu verschaffen. Nämlich in die Natur der Elemente, mit denen ich als Künstler täglich zu tun habe. Das Farben-Formen-Modell ist eine Art Algorithmus von grosser

[8] "After having had a look at your color books, (but without having read them so far), I had the following fragment of thought tonight, which I would like to hold on to. If colours are forms, (and do not have forms), and therefore if shapes are colours, (and do not have them) […] And if 'theory' is the contemplation of 'pure forms', then 'colour theory' is a tail-eating dragon ('uroboros'), for it is the contemplation of colours in colour. […] And if 'formula' is a diminutive of 'form', then the edifice of algorithms and theories ('science') is a pointillist brush ('worldview')."

[9] "There is not only an interaction between colours on the one hand and shapes on the other, but also between colours and shapes. No colour is conceivable without a form, and no form without colour. Conversely, any colour can be thought of in any shape, and any shape in any color."

Vielfältigkeit […].“[10] (ibid.: 148) Flusser’s understanding of the relationship between form and colour shares some traits with Gerstner’s model, for instance the notion of continuity and the idea that forms and colours cannot be considered separately. However, contrary to Gerstner, Flusser’s colour theory is centred on the relationship of colours to numbers.

In early 1988, Flusser wrote two texts to begin his dialogue with Gerstner: „Farben statt Formen“ (Colours instead of Forms) – written for a projected meeting with Gerstner on March 31 – and „Farben verschlüsseln“ (Codifying Colours) that he personally dedicated to him. He mentions the project of the House of Colour in a letter dated March 4, 1988, shortly after his return from the first meeting in São Paulo adding his essay „Farben verschlüsseln“.[11] “Haben Sie Zeit und Lust zu reagieren?”[12] he writes enticingly.

The original of the letter that I received from Muriel Gerstner is accompanied by a handwritten page from Flusser himself (see fig. 1). There is no trace of this text in the archives in Berlin and São Paulo. At the top of the page there are eight stages that retrace Flusser’s theory of code-evolution and at the bottom two drawings of denotative and connotative codes. However, there is no mention of colour.

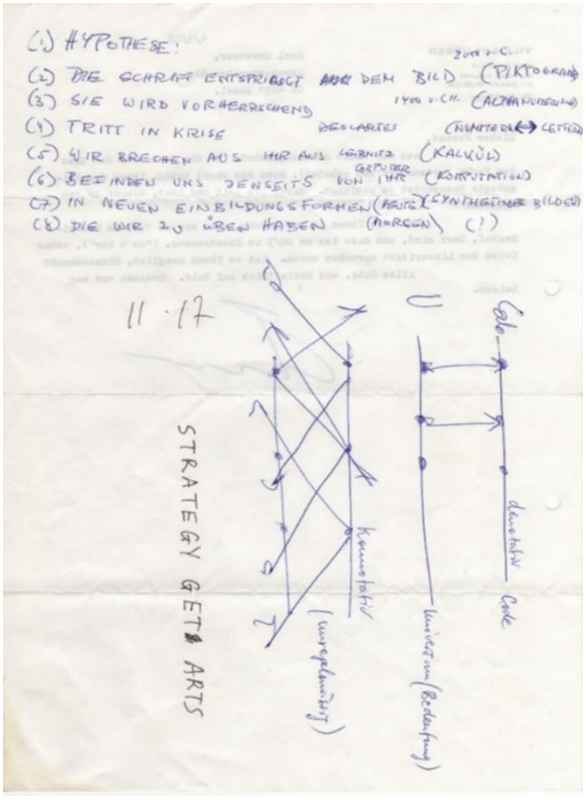

Fig.1

“Farben statt Formen” and “Farben verschlüsseln” are intimately linked to the friendship and unfolding theoretical dialogue between Flusser and Gerstner in the context of the House of Colour. They reveal their true significance only if read within this specific context. However, when they were first published in *Lob der Oberflächlichkeit. Für eine Phänomenologie der Medien* (1993) these essential traces were obscured and erased. The two texts were published together under the single title[13] “Farben statt Formen” (Flusser 1993: 118–129). The reference to the projected meeting with Gerstner on March 31 was removed and the date at the end (1989) changed.[14] Furthermore, both texts were slightly altered, and some

[10] “The model is thoroughly speculative and was created for the sole purpose of giving myself some insight, into the nature of the elements that I deal with on a daily basis as an artist. The color-shape model is a kind of algorithm of great diversity […].”
[11] See Vilém Flusser and Karl Gerstner, Letters in this issue of *Flusser Studies*.
[12] “Do you have the time and feel like resacting?”
[13] The same editorial strategy was applied to the two texts “Vom Umfärben der Grünen” and “Bunte Tiere”, see Guldin, Coloured Technical Images: 10-11.
[14] In the editorial comment both texts were described as a preparation for a meeting with Gerstner in Robion from March 31 to April 2, 1989, instead of 1988 (Flusser 1993: 334).

passages changed or simply removed. This is particularly evident in the last summarizing paragraphs of the two texts. In „Farben verschlüsseln" the last paragraph mentioning the project of House of Colour in São Paulo was omitted. The last sentence of the original version described the text as a question addressed to Karl Gerstner: "Was, (wenn überhaupt etwas), hat er dazu zu sagen?"[15] The second part, „Farben statt Formen", was also decontextualized, the remaining part of the last paragraph was rewritten and integrated into the previous one.[16]

Flusser wrote an English version of the essay "Farben statt Formen" ("Coloration replacing formalisation") most probably for the participants of the Brazilian project. Someone noted with a pen "*Casa da Cor"* at the top of the first page. In this text, which is inspired by Gerstner's discussion of the relationship of colour and form Flusser moves beyond his sketchy observations in his first letter to Gerstner (September 24, 1987), by opposing a thinking based on form to a thinking operating with colours. "In Western tradition 'form' is taken to mean container ('morphé'), and that container is supposed to be empty. On the other hand, the world of appearances is taken to be shapeless, ('a-morphous'), and to somehow flow from the past toward the future. Human understanding is taken to be the act of pouring appearances into forms. By this filling the forms with appearances it is supposed that the forms acquire contents, (meanings), and the appearances acquire an order which may be manipulated. This act of filling forms with appearances is called 'formulation', 'formalisation', and the result is called 'information'." (p. 1) Geometrical forms were seen as "color-less figures", triangles or circles, spheres, pyramids and cones. "To 'formalize' meant to fill those basic forms with appearances, like one fills canals with water. In fact: the whole idea is probably due to irrigation." (ibd.)[17] In analytical geometry these figures were transcoded into numbers. Appearances were formulated in algorithms. Formal thinking became numerical thinking, "the very basis of modern scientific and technical thinking." Forms and numbers are closely linked. Colour plays a subordinate role as it belongs to the shifting world of appearances. The relationship between forms, numbers and colours, however, has shifted in the course of time. We do not see colourless forms. "What we do see is colors in various shapes, and what we call 'form' is the passage between individual colors. We do not see empty containers […], but only contents which usually

[15] "What, (if anything), does he have to say about this?"

[16] Here is the original version: „Damit wird deutlich, dass das hier vorgeschlagene Projekt eine langwierige, disziplinierte, und kostspielige Anstrengung erfordert, die nur von Teams geleistet werden kann, an dem Forscher aus allen Gebieten teilzunehmen haben. Gerstner und ich können nur bemüht sein, dieses Projekt in die Bahnen zu lenken. Niemand kann diese Bahnen voraussehn, denn sie werden sich verzweigen und vervielfachen je weiter das Projekt läuft. Und eben deswegen geht es hier um ein Abenteuer." The last sentence of the changed text – „Es handelt sich um ein Abenteuer, eine immer tiefere Einsicht in die Welt und uns selbst zu gewinnen" (Flusser 1993: 129). – reinterprets the project of the House of Colour in more general terms. The reference to Gerstner and their collaboration can also be found in the English version of the text, "Coloration replacing formalisation": "It thus appears that the project proposed here will demand a prolonged, sustained, and costly effort to be undertaken by teams of specialists coming from every branch of research. What Gerstner and I can do is only to be of assistance in the launch of the project, nobody can have control over it, because it will branch out and multiply as it progresses. Which is precisely what makes it such an adventure." (p. 5)

[17] I quote from the text published in this issue of *Flusser Studies*.

overlap but sometimes may be distinguished. This has been shown by people coming from very different horizons, and lately very convincingly by Gerstner." (ibid.) As the title suggests, Flusser proposes to replace formalisation with coloration without however abandoning the numerical tradition. "Thus there can be no question of abandoning formal thinking for color thinking. But what we can try to do is to *link* color thinking to formal thinking. Colors to numbers […]." (ibid.: 2)

Besides the relationship of form and colour, Flusser adopted from Gerstner's *Die Formen der Farben* also Günter Wyszecki's notion of "uniform colour space," which plays a central role in the project of the *Colorarium* mentioned by Gerstner in the epigraph (see Gerstner 1992). Wyszecki's unitary colour space (Gerstner 1986: 16-8) is not based on the traditional notion of a central white and black axis which allows for different hue layers but not for equidistance (*Gleichabständigkeit*). In this conception, the distances near the central axis are smaller than those in the periphery. Because of this, Wyszecki used a space lattice whose points of intersection have the exact same distance from each other. The close packing of spheres (*Kugelpackung*) results in a cuboctahedron (see fig. 2) with twelve corners, each representing a colour. The different colours are all equidistant from the thirteenth colour at the centre. This central point is also the intersection of all levels and corresponds to a neutral grey. Wyszecki's model operates with significantly fewer elements than the classical models but with a clearly improved precision and a much greater diversity. The cuboctahedron, so Gerstner, allows for a surprisingly new experience of colour and represents an inspiration for every artist. Flusser used the cuboctahedron for the utopian idea of a *Colorarium* in São Paulo to which I will come back in the section dedicated to Flusser's collaboration with Philippe Henry. For Flusser the essential point of Wyszecki's unitary colour space was probably the notion of equidistance with its promise of an unhierarchical unity of a multitude of equally significant elements, or points of view, a notion which is at the very heart of his thinking, for instance in his conception of photography as a roaming from one point of view to another and his practice of consecutive self-translations.

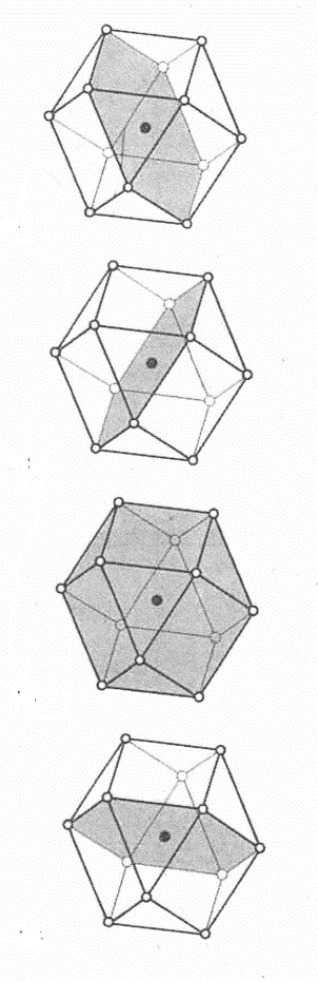

Fig. 2: Cuboctahedron (Gerstner 1986: 17)

In "Coloration replacing formalisation", Flusser introduces what he calls a Galilean "mental experimentation" (p. 2) to show how a future thinking in colour might actually function. This idea is to be fed into Gerstner's model based on Wyszecki's new uniform colour space in the same way that water was poured into the canals of the geometricians of Antiquity. "It is not important whether this experimentation is correct, only whether it 'works'." (ibid.: 2) The idea, to which

Gerstner alludes in the epigraph, is to visualize the history of the Roman empire in colours. Flusser suggest creating a movie that shows how the single colours overlap, spread, mix and mingle, grow in size and shrink again, become brighter and dimmer. The static structure of the Cuboctahedron is thus being animated. The different shapes cannot be identified as things but remain abstract in their form. "Such an 'abstract' color film of the Roman empire would be the product of 'pure' color thinking, like mathematical formulae are products of 'pure' numerical thinking." (ibid.: 3) The hypothetical motion picture begins with seven small yellow spots surrounding a bigger red spot representing respectively the seven Roman hills and the forum. A third colour would represent the dimension of the sacred, the *templum*: "let us choose blue". (ibid.) Green for the Greek influence will also have to be added. "A very complex mingling of the three basic colours[18] will be set in motion, but will be seen, very soon, to result in rather clear distinctions." (ibid.). The film will end "when the original three colors red, yellow, and blue will have lost their original meaning through mixtures and overlappings." (ibid.: 4)

Flusser visited Gerstner in his house in Hippoltskirch in Alsace during his trip to Switzerland. He had been invited by Gerhard J. Lischka to hold a speech on the crisis of linearity on March 20 at the Kunstmuseum Bern. In a letter dated April 17, 1988, he writes: "Es ist mir eine Freude und Ehre, Sie zu unseren Freunden zählen zu dürfen. Ich hoffe, dass Sie sich inzwischen meinen etwas verrückten Vorschlag gemeinsam mit mir die Frage nach einem klaren und distinkten, aber doch konnotativen Farbcode auszuarbeiten."[19] At this early point, Flusser still seems to be hesitating between a strictly denotative and connotative colour code, a code that reunited Descartes' clarity and distinction with the plurality of meaning of connotation.[20]

Contrary to Flusser who wrote practically all his texts with a typewriter[21], Gerstner's letters to Flusser are all handwritten. Some of them look like canvases. Instead of the classical white letter paper in A4-format, Gerstner uses larger formats, filler paper, and sometimes checkered sheets. He also uses different colours and adds text portions in the margin of the page. Because of this, I have decided to publish Flusser's letters in a pdf-format and Gerstner's in jpeg-format, next to each other to stress the ongoing dialogue between Flusser the writer and Gerstner the visual artist. Of the four letters published in this issue the first one written in Hippoltskirch and dated May 25, 1988, is the most interesting. The lines of the text regularly move down the page but at the penultimate line the text suddenly jumps back up again to the middle of the page and continues

[18] A comparable triadic conception is mentioned in a letter Flusser wrote Gerstner on June 11, 1988. The polis consists of three separate spaces: the private space, the market, and the temple. Flusser links these three spaces to economy (people producing and consuming), politics (artists) and theory (intellectuals).

[19] "It is a pleasure and honour for me to count you among our friends. I hope that in the meantime you will work out my somewhat crazy proposal together with me on the question of a clear and distinctive, but nevertheless connotative color code."

[20] For a more detailed discussion of this aspect see Guldin, Coloured technical images in this issue of *Flusser Studies*.

[21] There are a few exceptions like the annotated page included in this essay (see fig. 1).

downwards again but in between the lines of the first part of the letter. The two spots are marked by an orange asterisk. The lines of the second part of the letter are highlighted in orange and green. In a box in the left margin, Gerstner added a quotation from a Robert Altman film. Meeting Flusser, he writes, was "eine grosse Bereicherung […] sie verwirren mich […] das höchste Lob, das mir einfällt."[22] Regarding the size of the letter, he adds ironically: "Grosse Pläne erfordern grosses Papier."[23] In the letter, he discusses Flussers idea of a radically new colour code and compares the universe of numbers to that of colours. The universe of colours has the advantage of being a closed system which is at the same time infinite and limited. "Man kann sich zwar stets ein Schwarz denken, das noch schwärzer* […] ist: aber irgendwann ist das Schwarz am schwärzesten."[24]

In another letter on large paper format, dated July 8, 1988, Gerstner discusses the notion of abstraction, implicitly drawing a fine line between himself and Flusser, who always made use of geometrical notions like point, line, and surface. In a previous letter (June 11, 1988) Flusser had compared Gerstner appraisingly to one of the present-day intellectuals from MIT, Silicon Valley, and Harvard who manipulate symbols and contribute to the reconstruction of the temple. "You are expecting too much from me", writes Gerstner. "So gern ich ein paar Steine zum Bau des Tempelberges heranschleppen will, ich fürchte es werden nicht mehr als Mosaiksteinchen sein (farbige, das schon): ich bin ein Künstler […] für einen […] klassischen Intellektuellen ist […] der Punkt bekanntlich ein Nullum und die Linie eine Nullum-Anhäufung. Dies im Unterschied zum Künstler, für den der Punkt nicht ein gedachtes Abstraktum, sondern ein anschauliches Konkretum ist. Und zwar eins von vielfältiger Gestalt und Farbigkeit. […] Weil ich [an] hoffnungsloser Unfähigkeit leide, abstrakt zu denken – bei aller Begabung, das Abstrakte anschaulich zu machen. Es ist nicht die Linie, die mich fasziniert, es ist sinnlich wahrnehmbare Linie."[25]

In the last letter included in this issue, Gerstner returns to the distinction between the space-time and colour-time relationship that Flusser mentions in "Color code: ad memoriam"[26], linking it to the notions of macro- and microcosm, but also to modern science and earlier philosophical views of the world. As Stephen Hawking points out, stars are so distant that neither their form nor their colour can be perceived. However, the only characteristic attribute of stars is the colour of their light. The same holds true for the microscopic domain. Copper phthalocyanine, also called phthalo blue is a particularly pure form of colour based on the multidimensional copper atom

[22] "A great enrichment [...] you baffle me [...] the highest praise I can think of."
[23] "Big plans require big paper."
[24] "One can always imagine a black that is even blacker* [...], but at some point, black is at its blackest. [...] Red? I mean: the reddest red."
[25] "As much as I would like to contribute a few stones to the construction of the Temple Mount, I'm afraid it won't be more than mosaic pieces (coloured ones, of course): I'm an artist [...] for a [...] classical intellectual, as is well known, the point is a nullity and the line is an accumulation of nullities, contrary to the artist, for whom the point is not an imaginary abstraction, but a vivid concreteness of diverse shapes and colours. Because I suffer from a hopeless inability to think abstractly – despite all my talent for making the abstract concrete. It's not the line that fascinates me, it's a sensually perceptible line."
[26] See the section on Philippe Henry.

which is at the centre of a microscopic constellation and is surrounded and protected by a symmetrical cloud of electrons. As Flusser, Gerstner uses colour thinking to achieve a new comprehensive vision of the world that incorporates past and present, science and astrology, as well as the infinitely big and the infinitesimal.

The two texts that Gerstner and Flusser wrote on each other testify to their intimacy and friendship as kindred spirits. In "Karl Gerstner", Flusser stresses that the perception of the senses and the world would have to be considered in their fundamental unity. "[…] die Wahrnehmung selbst so wie sie eben ist […] Welt und Sinnesorgane sind nur die beiden extrapolierten Horizonte des Wahrnehmens, des 'Konkreten'." (p. 1)[27] This unifying phenomenological approach is also Gerstner's view of reality. If we consider the world and sensual perception separately, we end up with a theory of colour based on electromagnetic oscillations. "Das ist der Grund, warum den Naturwissenschaften das Konkrete immer droht, zwischen den Fingern zu entschlüpfen. Gerstner vermeidet diesen Fehler. Er geht vom Konkreten aus, nämlich von der Wahrnehmung 'Farbe'."[28] In his endeavour, Gerstner relies on previous research, among them the work of Goethe and Wyszecki. „Nicht alle haben den Fehler der Naturwissenschaften begangen, die Farbwahrnehmung aus der synthetisierte 'Welt' erklären zu wollen, also etwa von der Optik oder von der Neurophysiologie her. Mindestens seit Goethe sind einige Forscher von der konkreten Wahrnehmung ausgegangen, und es ist Wyszecki gelungen, eine ziemlich überzeugende allgemeine Struktur des Farbenuniversum vorzustellen." (ibid.: 2)[29] Gerstner strives to expand these theoretical premises but above all he wants to put them into practice so as to reach a completely new colour perception (*Farbwahrnehmung*). He is not so much a discoverer as an inventor in the universe of colours. Flusser compares Gerstner's method to that of the musician Johann Sebastian Bach.[30] The universe of sounds can be analysed in scientific terms, using an anti-phenomenological method based on neurophysiology. Bach moved beyond these assumptions opening up new unheard-of horizons. "Die Farbenflächen Gerstners müssen so angesehen werden, wie die Bachschen Fugen angehört werden. […] Die Algorithmen, auf denen eine Bachsche Fuge beruht, sind wahrscheinlich weniger komplex als die fraktalen Gleichungen, die in den Werken Gerstners ansichtig werden. […] und dennoch gibt die naheliegende Parallele Bach/Gerstner zu denken." (ibid.: 2)[31]

[27] "[...] perception itself as it is [...] The world and the sense organs are only the two extrapolated horizons of perception of the 'concrete'." I am quoting from the version published in this issue of *Flusser Studies*.
[28] "This is the reason why the concrete is always in danger of slipping between the fingers of the natural sciences. Gerstner avoids this mistake. He begins with the concrete, that is, the perception of 'colour'."
[29] "Not all of them have made the mistake of the natural sciences of trying to explain colour perception from a synthesized 'world', i.e. from the point of view of optics or neurophysiology. At least since Goethe, some researchers have begun with concrete perception, and Wyszecki has succeeded in presenting a rather convincing general structure of the color universe."
[30] For the complex relationship of colour and sound see Gerstner's wonderful chapter "Korrespondenzen" (1986: 163-180).
[31] "Gerstner's colour surfaces must be experienced the same way as Bach's fugues. [...] The algorithms on which a Bach fugue is based are probably less complex than the fractal equations seen in Gerstner's works. [...] and yet the obvious parallel between Bach and Gerstner is something worth thinking about."

Gerstner's true significance lies in his creative practice which proves that it does not make any sense to distinguish between science and art. His work announces a new culture. „Eine […] Kultur, die sich nicht mehr in einen 'exakten' wissenschaftlichen und einen 'weichen' künstlerischen Zweig teilt, sondern in welcher die Kunst exakt wird. Was bei Leonardo Programm war, wird bei Gerstner konkretes Projekt: 'fantasia essata'." (ibid.: 2)

Flusser criticises Gerstner's use of the computer. "Gerstner hat die von ihm benötigten Instrumente (der Computer) zur Verfügung, und verwendet sie nur beiläufig. Das ist eine Kritik an seiner Arbeit, die ich vielleicht nur deshalb vorlege, weil mir die Gründe für die bewusste Einschränkung, die sich Gerstner auflegt, nicht klar sind."(ibid.: 2)[32] In *Die Formen der Farben*, Gerstner mentions his use of the computer several times. When he began developing his colour-form-model he soon realized that the use of a compass and a ruler were not enough to create a continuous system, but that with the help of a computer and a plotter the problem could be easily solved (ibid.: 130). In 1970, Klaus Thomas of IBM-Stuttgart helped him to create the necessary program which at that time still operated with punch cards. By the simple push of a button the desired result was available first on a screen and then on paper. "Es war zugleich meine erste Begegnung mit der neuen Zeit, das fassungslose Erstaunen über das Werkzeug Computer. In Sekundenschnelle erschienen die Figuren auf dem Bildschirm […]."[33] (ibid.: 131) The difference between Flusser and Gerstner in their relationship to computers is of conceptual nature. Gerstner uses the computer as a tool to realize his artistic plans, Flusser, on the other hand, sees in the computer a machine that can radically transform our view of reality.

In the text Gerstner wrote after Flusser's sudden and unexpected death in November 1991, „Vilém Flusser und die Farben"[34], he begins by quoting passages from Flusser's letters and texts that emphasize the personal side of their relationship: „Es ist Ihnen gelungen, lieber Freund, mich in Ihr schwindelerregendes Universum zu tauchen" (p. 1)[35], wrote Flusser in his first letter (September 24, 1987). It was the same thing for me, adds Gerstner: 'Schwindel', vertigo, is a metaphor for the creative spiral of thinking. And he continues: "It was a pleasure to complement and develop our insights – synergistically, so to speak – in the most beautiful way."(ibid.: 1) Gerstner returns to the thorny question of denotative or connotative colour codes. Colour codes are generally connotative in nature because the different vectors of meaning (*Bedeutungsvektoren*) intersect. One symbol has different meanings, and a single item can be signified by different symbols. Flusser, on the

[32] "Gerstner has the instruments he needs (the computer) at his disposal and uses them only casually. This is a criticism of his work, which I am putting forward only because the reasons for this deliberate restriction that Gerstner imposes on himself are not clear to me."

[33] "At the same time, it was my first encounter with the new era, the astonishment at the computer as a tool. In a matter of seconds, the characters appeared on the screen [...]."

[34] See this issue of *Flusser Studies*.

[35] "You have succeeded, dear friend, in immersing me in your dizzying universe." I am quoting from the version published in this issue of *Flusser Studies*.

other hand, „hatte einen Farbencode im Sinn, der ebenso präzise ist wie der Zahlencode, nämlich de-notativ, clair et distinct. Ein solcher Farbencode könnte das obsolet gewordene Alphabet – Code für Sprache – ersetzen, die Zahlen – Code für Logik – erweitern und insgesamt eine neue Kulturstufe schaffen, so sein Postulat. Ich fand es *verrückt* – und machte *mit skeptischer Begeisterung* mit. [emphasis mine]“[36] (ibid.: 2) There are good reasons to believe, he adds, that the colour code is not only a supplement to the numerical code, but superior to it in some ways. To harmonize both codes means nothing less than to make thinking accessible to the senses and vice versa.

Contrary to Flusser who attempted to formulate what he himself calls a pointillistic colour code in which the single colours were adapted to corresponding numbers, Gerstner proposes a more encompassing view of their relationship. If one compares the colour universe with the universe of numbers, both similarities and differences can be made out. The centre of the universe of numbers is zero while the centre of the colour universe is the colour grey. Both universes are not only linear, but two- and three-dimensional. The first ten numbers are primary. Similarly, there are spectral colours and primary colours, plus black and white. Numbers go to infinity in all directions. In the colour universe, there are well-defined boundaries: there is no whiter white than white and no redder red than the reddest red. The universe of numbers is oriented from the inside to the outside, the colour universe from the outside to the inside. The property of finiteness on the one hand and that of unlimited divisibility on the other make up the special charm of the color universe. Flusser has taken up some of these reflections in “About a House of the Color”.[37]

In the last part of the text, Gerstner sketches briefly the European history of colour from Greek Antiquity to the present. In ancient Greece, geometry became the mother of all sciences. This explains why colour was treated as a subordinate subject in the ensuing tradition. Descartes also defined form as primary and colour as secondary. This is basically Flusser’s line of argumentation in “Farben statt Formen”. “Form ist durch Zahlen zweifelsfrei – objektiv wahr – durch den Geist zu definieren, während Farbe -subjektiv trügerisch – von der Rezeption durch die Sinnesorgane abhängt. Damit wurde die Trennung zwischen Wissen und Erleben endgültig – bei eindeutiger Dominanz des Wissens.“[38] (ibid.: 4). Goethe’s *Farbenlehre* was a passionate attempt to break away from this tradition and to restore the rights of the senses in their relationship to reason. A completely different history would have been possible if colours and numbers had been considered complimentary from the beginning, like energy and matter or waves and particles. „Flusser war ein

[36] “Had a color code in mind that was as precise as the numerical code, namely denotative, clear et distinct. According to his postulate, such a color code could replace the obsolete alphabet – code for language – expand numbers –the code for logic – and create a new level of culture altogether. I thought it was crazy – and went along with sceptical enthusiasm.”
[37] Flusser, About a House of the Color: 4. See also Guldin, Coloured technical images: 14.
[38] “Form is to be defined by numbers beyond any doubt – objectively true – by the mind, while colour – subjectively deceptive – depends on the reception by the sense organs. Thus, the separation between knowledge and experience became final – with the clear dominance of knowledge.”

radikaler Provokateur. So wollte er auch sein Denken verstanden wissen – Im Farbencode sah er einen Hoffnungsträger."[39] (ibid.: 6) Even if Gerstner and Flusser were soul brothers, they were not identical twins. Their thinking on colour overlaps in certain places, but fundamental differences persist.

Philippe Henry: The Project of the *Colorarium*

> „S. Paulo has never been a real city. [...] But there is an archipelago of intellectuals [...] Each island of the archipelago is isolated and maintains no connection to the other islands. On the other hand, every single island is connected underground to the ghettos of intellectuals in the developed world. The House of Color would be a place where these underground connections could be pooled and the information running in them processed."
>
> Vilém Flusser

In 1991, Philippe Henry published an essay[40] that he had written in 1988 on the House of Colour, in which he introduced the main objectives of the project along with a short history of colour perception. He sent Flusser a first draft in Portuguese in April 1988. "Changes are occurring among a number of scientific premises, and these changes are not restricted to modern physics. Change is also occurring in human culture through a radical transformation of our values. In this cultural context, colour seems to have acquired a primeval function, either as an indicative sign or as a sign that, when manipulated and structured, serves as an accelerating agent in the development of a new universal vision. At the *Casa da Cor* project, we believe that it is possible to manipulate and structure the denotative function of colour theoretically and, as a result, accelerate the development of a new vision of human beings and their universe" (Henry 1991: 321) Very much in tune with Flusser's theoretical approach Henry stresses the denotative dimension of colours and their importance in the development of a radically new vision of reality as well as the necessity of a culturally oriented theory of colour in view of "the prevailing contempt with regard to appearances" that reduced colour to a merely "optical and physiological" (ibid.) phenomenon. "Between the occidental perspective, wherein colour is an optical and physiological phenomenon, and the oriental perspective, wherein colour is a mystic sign, a transcendental indicative, there is an enormous valley to be explored. We could call it 'colour as logos' or 'colour as a system of ideas'. This proposition is being

[39] "Flusser was a radical provocateur. That's how he wanted his thinking to be understood – he saw a beacon of hope in the color code."
[40] See also Ph. Henry, From a Universe in Colors toward a Color Universe in this issue of *Flusser Studies*.

systematically explored by the *Casa da Cor* project and generates more questions than answers at present." (ibid.: 322)

The letter exchange between Vilém Flusser and Philippe Henry[41] covers a period of about two-years, from July 1987 to November 1989, and deals mainly with the organization of the project of the House of Colour in São Paulo. Henry and his wife visited Flusser in Robion and met Edith and Vilém Flusser in Brazil on several occasions. The letters were often accompanied by texts related to the project, both by Flusser and Henry, who considered Flusser a teacher and a source of inspiration. Flusser's first letter, dated July 22, 1987, is an answer to a previous letter by Henry (July 4, 1987) which unfortunately has not been preserved. Henry had invited him to come to Brazil in August 1987 for a first clarifying meeting about the project of the *Casa da Cor*. "O tema me fascina", writes Flusser, "estou lendo e consultando pessoas. Você consegui engajar-me. Até breve, caro amigo."[42] Flusser could not come as he participated in the IV. International Kornhaus-Seminar (27. bis 31. August). He offered to come to Brazil in December. Along with the letter he sends a first essay "Reflexões sobre 'A casa da cor" a construir em S. Paulo" in which he emphasizes the need of a cultural theory of colours.[43] The cultural scene, writes Flusser, has been transformed by the emergence of colours: in advertisements, on everyday appliances and in architecture. The overwhelming presence of colours is a symptom of the present cultural crises, the transition from the industrial society to the post-modern society of telematics, a theme that Flusser had already developed in many other previous texts.[44] A first meeting with Henry was planned in Robion for January 1st, 1988. In February Flusser travelled to São Paulo. On February 9, 1988, he held a speech[45] in a meeting in the Museu de Arte de São Paulo. The following letter (March 1st, 1988), dealt with the planification of the first reunion in Brazil (March 19, 1988) that Flusser would not attend. However, he wanted to participate with a video interview in Robion planned for March 3 and realised by Hervé Maury. Flusser sent Henry the conference text "A cor no mundo pos-moderno (Entrevista-video para a Casa da Cor, Robion 3/3/88)." In a handwritten note at the bottom of the letter he mentioned Henry's text for *Leonardo* (Henry 1991) – "esperando por teu texto" (waiting for your text) – and refered to a future meeting with Henry and his wife in Robion on July 14, 1988. The video interview shown in Brazil provoked some questions that Henry communicated to Flusser over the phone. This led to another short text, "Codigo de cores (Resposta a tres intervencões sobre a minha entrevista-video 3/3/88)", that Flusser sent Henry together with a letter, dated March 30, 1988) He wanted to read the text on the occasion of the following video interview in

[41] See this issue of *Flusser Studies*.
[42] „The topic fascinates me." "I'm reading and consulting people. You managed to engage me. See you soon, dear friend."
[43] See also "Casa da Cor, (reflexões complementares) (Reunião no MASP, S. Paulo, 9/2/88)" in this issue of *Flusser Studies*.
[44] See "L'irruption du téchno-imaginaire", "Post-Moderne Farben" and"A cor no mundo pos-moderno". See also Guldin, Coloured technical images.
[45] For a transcription of this speech see "Mesa redonda" in this issue of *Flusser Studies*.

Robion planned for April 4-5. Henry met Flusser in Robion and Jean Digne and Simoneau in Paris and sent Flusser (April 24, 1988) an early Portuguese version of his text on colour that would be published in *Leonardo* (Henry 1991). He stressed the importance of Flusser's participation in the project of the House of Colour: "Admito-me completamente ultrapassado na já grande expectativa que eu tinha de sua participação. Cada nova carta sua, cada video, cada conversa telefônica vem carregada espantosa surpresa; o Sr. assumiu uma posição de istigador inigualável [...]."[46]

Henry complains about the lack of further financial aid besides the BASF, but also mentions the possibility of establishing a second base in Paris and an international group of coordinators. "Nao reagirei aos teus comentarios elogiosos" writes Flusser modestly (April 29, 1988), "porque os acho exagerados, mas quero confessar que minha relação contigo, (e a relação de Edith contigo), vai se transformando em amizade muito grande."[47] In "Casa da Cor, S. Paulo", a short text for Felipe (Henry) and Jean (Nouvel) written after the meeting with Henry in Robion (July 16, 1988), Flusser discusses some proposals for the next phase of the project (August 1988 to August 1989).

In August 1988, Flusser held two conferences: "In search of a colour code" (August 10) and "Why the House of Colour in Sao Paulo?" (August 11).[48] In the aftermath, Henry continues to look for new financial sources and writes about his difficulties in trying to reconcile the cultural goals of the project with the economic realities, and the interests of the sponsors (November 23, 1988). "Não gostaria que questões monetárias representassem qualquer impecílio no proseguimento de nosso trabalho."[49] Henry invites Gerstner and Flusser to write a short introduction for the planned multidisciplinary journal "Revista da casa da Cor". Besides Flusser and Gerstner he also plans to invite Gottfried Jäger, Louis Bec, the Japanese Yoichiro Kawaguchi (a specialist in synthetic images), George Gessert (one of the best-known artists in the contemporary art movement known as bio-art), and José Lunazzi (the Argentinian specialist in laser and holography). The last two did not participate in the conference. "Reconheço, inclusive em suas 'violentas' críticas uma demonstração de interesse e estima. [...] Creio poder dizer que isto também se estende à Annick que divide comigo este carinho e admiração por vocês."[50] Together with a letter dated December 7, 1988, Henry sends Flusser two copies of the interview "Um alafabeto de azuis e amarelos" published in the journal *Superinteressante* in November 1988 (Flusser 1988b). Flusser

[46] "I admit that I am completely overwhelmed by the great expectations I had of your participation. Every new letter from you, every video, every conversation on the phone come loaded with astonishing surprise; you have assumed the position of an incomparable instigator.

[47] "I will not react to your flattering comments because I think they are exaggerated, but I want to confess that my relationship with you, (and Edith's relationship with you), are turning into a great friendship."

[48]The transcriptions of the two conferences also contain a questions and answers session (see this issue of *Flusser Studies)*.

[49] "I wouldn't want that monetary issue to become a hindrance in the pursuit of our work."

[50] "I recognize, even in your 'violent' criticisms, a sign of interest and esteem. [...] I think I can say that this also extends to Annick who shares with me this affection and admiration for you."

accepts to participate in the upcoming conference of 1989, wants to extend the invitation to his cousin David Flusser and adds another text: "Reflexões em torno da Casa da Cor (Para a revista Casa da Cor)". In a letter bearing both Flusser's and Gerstner's names written after another meeting at Hippoltskirch (December 12, 1988), Flusser suggests the elaboration of colour codes "capable of carrying messages concerning scientific; technical and aesthetic communication […]. The problem of adequation of the universe of colors to the universe of numbers will occupy a central place in our research." Monthly meetings are planned and the inclusion of Louis Bec because of his work on "computer projected color forms."

In a letter dated January 31,1989, Flusser mentions Wyszecki's colour theory that he met through Gerstner: "In our search for possible color codes we have taken Wyszecki's model of 'Uniform Color Space' for a basis. The problem of numerical codification in the Cartesian sense (see analytical geometry) is one of finding coordinates. By having recourse to the above-mentioned model, we have abandoned the electromagnetic strip, and we have provisionally established the following parameters of coordinate systems." In tune with the multidisciplinary character of the project, Flusser lists the following parameters: physical (waves), chemical (pigment, saturation neurophysiological, biological, psychological, cultural and mathematical. He also wants to look for possible "crossings" between the cultural, neurophysiological approach with what he calls "deliberate codes", "typological-topological, aesthetic, orientational, science and technology, traffic, publicity." Louis Bec will feed everything into his computer. "The basic concept is transcoloration instead of transformation, and morphogenesis on the basis of color." Color is no longer a content of a form, but a primary constituent of form. 'Instead of the Kantian 'time-space' Flusser suggest the pair time-color'."

Two theoretical papers co-authored by Flusser and Gerstner follow. "Color code: Ad memoriam II" (March 6, 1989)[51] is based on a meeting at Gerstner's on February 19, 1989. "Gerstner and Flusser have independently come to the conclusion of building a 3D model of the uniform color space […] Flusser imagines that it is possible to feed into such a static structure various data concerning dynamic processes, and thus to render visible in a color code those processes (like for example the history of culture, some economic developments and tendencies, metabolistic [sic!] processes and mathematical operations). Gerstner is considering the presentation of that model at our S.Paulo meeting to become his foremost contribution […] As for Flusser, he tries to take literally the statement that 'color should be treated like forms [sic!]' and he will try to formulate some aspects of Occidental history of culture as a development of color forms."

[51] For the first text "Color code: ad memoriam" (January 29, 1989) see the letter exchange with Karl Gerstner in this issue of *Flusser Studies*. This text corresponds to the content of Flusser's letter to Henry (January 31, 1989) that has already been mentioned.

The third part of the second text, "Color code: Ad Memoriam III (Meeting at Flusser's, 31/3-2/4)" dated April 1, 1989 and based on a meeting in Robion, returns to the notion of the uniform color space. As already explained in a proposal sent on March 29, Gerstner managed to visualize the totality of the seven possible cuts of Wyszecki's radically new uniform color space in the form of 64 plates. Flusser proposes to feed his color codification into Wyszecki's Cuboctahedron and suggests the form of a sphere. Flusser and Gerstner want to build a small-scale three-dimensional model. "It could consist of tube structures which connect the color like knots, and which contain light bulbs coloured in different hues in exact accordance with the color universe model." The individual bulbs could be programmed, and complex processes fed into the model which would be visualized and thus concretely experienced. "The definite realisation will be what might be called the nuclear content of the Casa da Cor: the 'Colorarium' which can visualize all kinds of processes (for instance, in history, biology, or in whatever), as Flusser has suggested in previous papers. Thus, information might reach a quality as has never been seen before. […] the 'Colorarium' could also become a structure as big as is the Géode in Paris [see fig. 3], and thus a paramount symbol for the city of São Paulo, possibly to be erected on a fascinating place like the top of the Jaraguà [see fig. 4], and this constitute an imposing piece of architecture". The ambitious project of the Colorarium is the visualization of a utopian promise.

In the following letters, the economic problems become more pressing. Henry informs Flusser of his last meeting with BASF where he presented the project of the *Colorarium* (June 12, 1989). The representatives of BASF agreed to Flusser's and Gerstner's proposal and wanted them to present the project in the upcoming August conference. However, they also insisted that new sponsors be found, and stressed the fact that they were still the only ones so far. Henry plans to organize a meeting in October 1989 or May 1990 with CEOs from different national and multinational companies. "[…] la Casa da Cor ne peut s'élitiser à l'extrême: elle doit représenter également une 'alliée' de l'industrie, elle doit aussi être proche de problèmes plus immédiats, ce que je dois accepter comme condition 'sine qua non'."[52] In his answer (June 17, 1989), which incorporates also Gerstner's opinion, Flusser expresses some doubts: the power of decision has moved into the hands of the BASF. He adds surreptitiously: "Refletirei sobre se isto me interessa."[53] As he points out, Henry had asked him to shift the subject of his August speech from color codes to natural and digital colours. "Devo-te confessor que meu ceticismo quanto ao projeto todo està aumentando, e que continuo engajado apenas movido pela minha amizade." In his answer (June 24,1989) Henry reacts to Flusser's remark that the power of decision has moved into the hands of the BASF. He

[52] "[...] the Casa da Cor cannot be elitist to the extreme: it must also be an 'ally' of industry, it must be close to more immediate problems, that's what I must accept as a condition 'sine qua non'."
[53] "I'll have to see whether this is of any interests to me."

has been working on the project for more than eight years and does not want the government as a sponsor and because of this has turned to the industry. One has to make concessions. "Não posso continuar brincando de 'bras de fer' com a BASF. […] Não desanime. […] Quero sua aliança, quero sua amizade […] Peço-lhe entenda minha posição, ela não é sempre fácil de administrar." [54]

Fig. 3. La Géode (Paris)

Fig. 4. Pico do Jaraguá (São Paulo)

After the August conference a series of budget-proposals from Flusser (September 1, 1989), Gerstner (September 15, 1989, and September 25, 1989) and Bec (September 1, 1989) follow. In a follow-up, referring to a meeting on August 23 between the directors of the *Casa da Cor* and the Brazilian BASF, Gerstner and Flusser present a three-part proposal: structure, program, and budget. "The 'Casa da Cor' is to constitute a new type of model for an Academy for interdisciplinary, international, privately sponsored research (a model for an 'immaterial house' in the sense of a network of human and artificial intelligences)", with the *Colorarium* "as the material nucleus of the immaterial network." All this, however, will not lead to any further concrete actions. In his last letter, Henry (November 11, 1989) criticises the radicality of the project, what in a previous letter he had called its elitist character. The House of Colour is very much advanced, too advanced and even superfluous for a country like Brazil, there is a "relação desequilibrada entre nossas expectativas individuais e o encaminamento do projeto".[55] The Brazilian BASF, he adds, suspended a meeting programmed for November 22 and concludes: "A propria BASF não acreditava realmente nisso."[56]

[54] "I can't keep playing 'bras de fer' with BASF. [...] Don't be discouraged. [...] I want your alliance, I want your friendship [...] I am asking you to understand my sit, it is not always easy to manage."
[55] "Unbalanced relationship between our individual expectations and the continuation of the project."
[56] "Even BASF didn't really believe in it."

Gottfried Jäger: Post-modern Colours

> "I was invited by V. F. to the S. P. conference with a lecture about color photography in the field of generative arts. […] I remember well: On the top floor of our hotel, we played Schach - Vilém and I - but I lost both games (which caused V. to remark that I was a fantastic chess player!)."
>
> Gottfried Jäger

In August 1989, Jäger spent a week in São Paulo and held a speech on colour photography on the second day of the conference (August 23). Flusser and Jäger already knew each other since early 1984. As with Gerstner, and on the very same day (March 4, 1988), Flusser initiated his dialogue with a short letter accompanied by the essay „Postmoderne Farben" which he personally dedicated to Jäger, possibly to lure him into a collaboration. "Ich bin an einem grossen Projekt, ('Haus der Farbe'), beteiligt. Das nötigt mich, über Farben auch im Sinn Ihrer Experimente nachzudenken. Ich schliesse ein Manuskript bei […]."[57] Jäger sent Flusser his new book *Bildgebende Fotografie.* In his answer on April 17, 1988, Flusser thanked Jäger for having sent him his book mentioning again the project of the House of Colour. „Ich bin an einem grossen (wahrscheinlich viel zu grossen), Projekt in Sao Paulo beteiligt, an einem 'Haus der Farben'. Ich kann Ihnen hier in der hier gebotenen Kürze die Sache nicht auseinanderlegen, sondern nur sagen, dass eine der Absichten ist, die Funktion der Farbe in der nächsten Zukunft zu bedenken. In diesem Sinn möchte ich Ihnen vorschlagen [...], folgendes Problem zu bedenken: Wenn sie sich irgendeine wissenschaftliche Publikation, (zum Beispiel den Scientific American), ansehn, dann werden Sie darin eine Reihe von Farbbildern finden."[58] Flusser list a few eyamples: coloured computer simulations, coloured projections of abstract calculations, such as fractal equations, and colour satellite photos. „Das zu bedenkende Problem ist dieses: Nach welchen Kriterien sind die Farben ausgewählt worden? Man hat den Eindruck, als sei die Wahl völlig aleatorisch […] Etwa: Elektrone rot, Positrone blau, die schwache Kraft gelb usw. Oder: Säuren rot, Basen blau, Salze grün usw."[59] The theoretical challenge is to adequate colours to quantities, that is, not to forms but to numbers. „Farben sind qualifizierende Symbole. Also geht es darum, quantifizierende Symbole zu qualifizieren. (Und umgekehrt selbstredend: Qualitäten zu quantifizieren). So etwas kann man doch nicht mehr der

[57] "I'm involved in a big project ('House of Colour'). This compels me to think about colours in the sense of your experiments. I enclose a manuscript [...]."
[58] "I'm involved in a big (probably way too big) project in Sao Paulo, a 'House of Colors'. I don't have enough space here to outline the project, I can only say that one of the intentions is to consider the function of colour in the near future. With this in mind, I would like to suggest [...] that you consider the following problem: If you have a look at any scientific publication, (for example, the Scientific American), you will find a number of colour images in it."
[59] "The problem to be considered is the following: what criteria were used to select the colours? One gets the impression that the election was completely aleatory [...] For example: electrons red, positrons blue, the weak force yellow, etc. Or: acids red, bases blue, salts green, etc."

empirischen Intuition überlassen!“[60] The adequation of colours to numbers should be clear and distinct in a Cartesian way. If such a theory could be developed a bridge between quantifying mathematical rational and qualifying aesthetic thinking could be reached. “Sollte es mir gelingen, Sie zu diesem Abenteuer zu *verführen*, (und Sie haben dafür die Kompetenz, die mir fehlt, dann würde ich in Sao Paulo vorschlagen, dass Sie dem Beirat des ‘Hauses der Farbe’ aufgenommen werden. [emphasis mine]“[61] In the following letter, Jäger asked Flusser to send him Gerstner’s address and met withPhilippe Henry. “[…] Felipe hat mir erzählt, (hier bei Louis Bec), wie an- und aufregend das Gespräch mit Ihnen war“[62], writes Flusser on October, 21, 1988. Jäger decided to travel from Paris to São Paulo on August 19 together with some Brazilian colleagues. “Ich hoffe, daß es klappt. Ich muß aber bald - also spätestens Ende der Woche zurück. Wann fliegen Sie zurück?“ [63]

After the conference, in a letter dated September 4, 1989, Flusser responded to some theoretical issues raised by Jäger: „Ihre beiden Briefe, (besonders der an Gerstner), ist voller Anregungen. und ich müsste Ihnen seitenlang darauf antworten, wozu mir jetzt die Zeit- fehlt. Daher beschränke ich mich auf praktische Punkte. Gerstner und ich haben (gemäß unserer Unterhaltung mit den BASF-Leuten) eine Struktur der Casa da Cor vorgeschlagen, und ich habe das vorgestern nach SPaulo weitergeleitet.“[64] On September 30, 1989, Jäger who did not know yet that BASF has definitely drawn back from the project proposed a possible continuation. „Schlußendlich überlege ich an einem Konzept in Sao Paolo für die nächste Runde. Vielleicht kann man das Projekt ‘Spielstrategien’ zugrunde legen (Text über die bisherige Werkentwicklung anbei). Es ist der Versuch einer Synopse von grafischen, fotografischen und musikalischen Zeichen, bei dem auch die Farbe eine bedeutende Rolle spielt. Sie ist Bedeutungsträger, wenn es geht, ‘Fortschritt’ kenntlich zu machen - hier also von der Farbenvielfalt auf die Farbeneinfalt, einer Art Farbentropie zu gelangen.“[65]

As already pointed out, Flusser sent “Postmoderne Farben” dedicated to Jäger and “Farben verschlüsseln” dedicated to Gerstner along with a letter from Robion on the very same day (March 4, 1988). This would explain the numerous similarities between the two essays. The texts are about the same length, the first page is practically identical, and the general line of argumentation is the

[60] “Colours are qualifying symbols. So it's a matter of qualifying quantifying symbols. (And vice versa, of course: to quantify qualities). You can't leave something like that to empirical intuition anymore!”
[61] “If I succeed in seducing you into this adventure (and you have the competence, which I lack, then I would propose in Sao Paulo that you be accepted as a member of the advisory board of the 'House of Colour'.”
[62] “[…] Felipe told me, (here at Louis Bec’s) how exciting the conversations with you had been.“
[63] “I hope it works. But I have to go back soon, by the end of the week at the latest. When are you flying back?”
[64] “Your two letters, (especially the one to Gerstner), are full of inspiration. and I would need pages to answer you, something I don't have the time to do now. Therefore, I will confine myself to practical points. Gerstner and I proposed (according to our conversation with the BASF people) a structure of the Casa da Cor, and I forwarded this to SPaulo the day before yesterday.”
[65] “Finally, I’m thinking about a concept in Sao Paolo for the next round. Perhaps one can use the project 'Game Strategies' as a basis (text about the development of the work so far attached). It is an attempt at a synopsis of graphic, photographic and musical signs, in which color also plays an important role. It is a carrier of meaning when it comes to making 'progress' recognizable - in this case, of the variety of colours a kind of color entropy.”

same. The first and last paragraphs of "Farben verschlüsseln" are different and refer directly to the *Casa da Cor* project that Jäger, contrary to Gerstner still did not know at that time. Conversely "Farben verschlüsseln" does not mention post-modernity.

The editorial policy of the Bollmann Verlag described previously[66], in a sense, follows in the footprints of Flusser's own writing strategy which was based on multiplication through a combination of innovation and repetition. Even adding or dropping the initial and final paragraph to recontextualize the text was one of Flusser's common writing strategies. It is not clear which of the two essays – "Postmoderne Farben" or "Farben verschlüsseln" – Flusser wrote first. He most probably wrote the second essay adapting the first one to the slightly different context. Besides the two German texts, there are two more related essays: "A cor no mundo pos-moderno (Entrevista-video para a Casa da Cor, Robion 3/3/88)"[67] and "A color revolution?" which was written for and published in *Artforum* in December 1988 (Flusser 1988a). Both texts discuss the role of colours from the same point of view as in "Postmoderne Farben" and "Farben verschlüsseln" and make use of the same terminology: the relationship of denotative and connotative codes, numbers and colours, quantity and quality, the importance of computers, the problematic divorce between science and art, and the lack of a cultural theory of colour.

In „Postmoderne Farben", Flusser develops in more detail the relationship between colours and numbers. His thinking at the time – the late 1980ies – was often outright utopian, especially with regard to the possibilities of computer technology. His earlier idea that machines and apparatuses created by man would eventually hit back (*zurückschlagen*) on his thinking was now overshadowed by a vision that seen from the present situation would have to be called problematical at the least. Machines, he writes at the beginning, can transform the world much better than human beings. Because of this they can help formulate clear and distinct codes. The progress of mathematical thinking is an attempt to create forms of codification that are more and more clear and distinct. Mathematical codes consist of symbols indicating quantity. However, the present task is to create codes that are as clear and distinct as mathematics but that do not only quantify but also qualify. The advantage of color codes with respect to mathematics is that they are both qualitative and quantitative, as for instance in traffic code and in some product labels. This might be pushed much further thanks to computers. "Man transkodiert Algorithmen aus Ziffern in Digitale und füttert sie in Computer. Diese arbeiten damit, und entwerfen sie als Punkte, Kurven und Flaschen auf Schirme, um sie dort programmgemäss zu variieren. Die Entwürfe kann man färben (man kann sie qualifizieren). Die Frage ist: wie gleicht man die Farben an die digitalisierten Ziffern an, wie

[66] See also Guldin, Coloured technical images: 10-11.
[67] See this issue of *Flusser Studies*.

qualifiziert man Quantitäten, wie kodifiziert man Farben."[68] (Flusser 1992) Quantification is a rational gesture that cuts up reality. Qualification, on the other hand, is an aesthetic gesture. "Daher bedeutet, Farben an Ziffern anzugleichen, die rationelle Vernunft zu ästhetisieren, und die ästhetische Vernunft, (die 'Einbildungskraft'), zu rationalisieren. Ein in Farben kodifiziertes synthetisches Bild ist daher zugleich ein Werk der 'reinen Vernunft', (eine Erkenntnis), und ein Werk der 'Einbildungskraft', (ein Kunstwerk)."[69] (ibid.) By introducing colours, the problematic schism of art and science can be finally overcome and scientific statements can be experienced pictorially (*bildlich erlebbar*). In this sense, computer-art can be seen as the very centre of post-modernity. Flusser had already attributed this visualizing task to technical images, for instance, analogue photography. The new coloured digital technical images seen on computer screens not only incorporate numbers and colours but allow for a more encompassing synthesis that also brings art and science together (*zur Deckung bringen*). Colours belong to the visual world and represent in this context the aspirations of art and a code-convergence of another kind. Flusser suggests the creation of coloured languages (*farbige Sprache*) that through spoken language and phonetics would also include musical codes. These would be the languages of the future. In the second part of the essay Flusser reconsiders the difference between denotative and connotative codes. Denotative codes are based on the univocity of correspondences, connotative codes on the other hand allow for multiple correspondences (see fig. 1). In Flusser's vision this simple opposition linked to that between science and art would also have to be transcended. In post-modern times new qualifying and at the same time clear and distinct codes would have to be elaborated. Colour codes would have to be denotated. This, however, does not imply any impoverishment of meaning leading to kitsch or bad art, as was assumed in the past.

The last aspect regards the intervals between numbers and brings us back to Gerstner's notion of a colour-form-continuum. "Differentialrechnungen hatten zum Ziel, die Intervalle zwischen den einzelnen klaren und deutlichen Ziffern dank Integration zu stopfen. Das ist nicht mehr nötig, weil Computer schnell kalkulieren, das heisst eine beliebige Menge von Digitalen in die Intervalle füttern können. […] Wenn man die Farben klar und deutlich kodifiziert, (etwa grün klar und deutlich von blau trennt), dann können die Computer den Intervall mit einer beliebigen Menge von Zwischenfarben auffüllen, ohne dadurch die Klarheit und Deutlichkeit des Codes von Zwischenfarben auffüllen, ohne dadurch die Klarheit und Deutlichkeit des Codes zu schmälern. Das

[68] "One transcodes algorithms from numbers into digitals and feeds them into computers. They work with them and project them as points, curves, and bottles on screens to manipulate them according to the program. The drafts can be coloured (you can qualify them). The question is: how do you match the colours to the digitized digits, how do you qualify quantities, how do you codify colours?"

[69] "Therefore, to adapt colours to numbers is to aestheticize reason, and to rationalize aesthetic reason (the 'imagination'). A synthetic image codified in colours is therefore at the same time a work of 'pure reason' (knowledge), and a work of 'imagination, (a work of art)."

bedeutet, dass es möglich geworden ist, 'gute' Kunst auf klare und deutliche Methoden (rationell), zu machen."[70] The new culture will be produced by machines which have been programmed by human beings. "Diese neue Lebensform wird sich besonders deutlich im Kodifizieren von Farben äussern. Es werden dabei Farbsprachen ausgearbeitet werden, welche das wissenschaftliche, technische und künstlerische Denken zugleich ausdrücken werden, und damit eine neue Synthese des Denkens, (und Handelns) überhaupt führen können. Es ist demnach die Aufgabe solcher Hersteller von Farbcodes […] zu zeigen, dass nicht nur das Herz eine Vernunft hat, von der die Vernunft nichts weiss, sondern dass ebensogut die Vernunft ein Herz hat, von dem man bisher das Herz keine Ahnung hatte. Dies ist die Herausforderung, welche die Farben in der Post-Moderne stellen werden."[71] The same passage with a few slight changes can be found at the end of "A color revolution?". "It would then appear that not only the heart has reasons which reason ignores, but that it is equally true that reason has a heart which the heart ignores, and that only if reason and heart become one, can we really develop the virtualities which are dormant within us. Color may be the place where those two can meet, and result in a new culture." (Flusser 1988a: 10)

References

Flusser, Vilém (1988a), A color revolution? On Science. Curies' Children, in: Artforum international, New York, 27/4, Dec.: 9–10.
Flusser, Vilém (1986), The Photograph as Post-Industrial Object: An Essay on the Ontological Standing of Photographs, in: Leonardo, 19, 4: 329–332.
Flusser, Vilém (1988b): Um alafabeto de azuis e amarelos, in Superinteressante, 2/1: 83-6.
Flusser, Vilém (1992), Postmoderne Farben, in: „Licht-Bild-Raum. Fotogene Projekte" ed. by G. Jäger, Paderborn:
Flusser, Vilém (1993), Farben statt Formen, in Lob der Oberflächlichkeit. Für eine Phänomenologie der Medien. Schriften Bd. 1, Bensheim und Düsseldorf: 118-129.
Flusser, Vilém (1996), Sao Paulo 1986, in: V. Flusser, Zwiegespräche, Göttingen: 29-33.
Flusser, Vilém, Letter exchange with Karl Gerstner (in this issue of *Flusser Studies*).
Flusser, Vilém, Letter exchange with Philippe Henry (in this issue of *Flusser Studies*).
Flusser, Vilém, Letter exchange with Gottfried Jäger (in this issue of *Flusser Studies*).
Flusser, Vilém, Karl Gerstner (in this issue of *Flusser Studies*).
Flusser, Vilém, Farben statt Formen (in this issue of *Flusser Studies*).
Flusser, Vilém, Coloration replacing formalisation (in this issue of *Flusser Studies*).
Flusser, Vilém, Reflexões sobre "A Casa da Cor a construir em S. Paulo" (in this issue of *Flusser Studies*).

[70] "The aim of differential calculus was to plug the intervals between the individual clear and unambiguous digits thanks to integration. This is no longer necessary, because computers can calculate quickly, i.e., feed any number of digitals into the intervals. [...] If the colours are clearly codified (e.g., green is clearly separated from blue), then the computer can fill up the interval with any number of intermediate colours without diminishing the clarity of the code. This means that it has become possible to make 'good' art (rationally) by clear and distinct methods."

[71] "This new form of life will be particularly evident in the codification of colours. Colour languages that will express scientific, technical and artistic thinking at the same time will be worked out, and this will lead to a new synthesis of thinking (and acting) in general. It is therefore the task of such manufacturers of colour codes [...] to show that not only the heart has a reason, of which reason knows nothing, but that reason just as well has a heart of which the heart has hitherto had no idea. This is the challenge that colours will pose in post-modernism." Flusser uses the same metaphor of the heart which he attributes to Pascal in "Casa da Cor, (reflexões complementares)" and in "Imagens em cores" (in this issue of *Flusser Studies*). See also Guldin, Coloured technical images: 18.

Flusser, Vilém, Casa da Cor, (reflexões complementares) (in this issue of *Flusser Studies*).
Flusser, Vilém, Mesa redonda (in this issue of *Flusser Studies*).
Flusser, Vilém, A cor no mundo pos-moderno (in this issue of *Flusser Studies*).
Flusser, Vilém, Codigo de cores (in this issue of *Flusser Studies*).
Flusser, Vilém, Casa da cor, S. Paulo (in this issue of *Flusser Studies*).
Flusser, Vilém, In search of a colour code (in this issue of *Flusser Studies*).
Flusser, Vilém, Why the House of Colour in São Paulo? (in this issue of *Flusser Studies*).
Flusser, Vilém, Reflexões em torno da Casa da Cor (in this issue of *Flusser Studies*).
Flusser, Vilém, About a House of the Color (in this issue of *Flusser Studies*).
Gerstner, Karl (1986), Die Formen der Farben. Über die Wechselwirkung der visuellen Elemente, Frankfurt am Main.
Gerstner, Karl (1992), Vilém Flusser und die Farben, Basler Magazin Nummer 9, February 29, p. 4-5 (in this issue of *Flusser Studies*).
Henry, Philippe (1991), A New Universal Vision: The 'Casa da Cor' (House of Colour) Project, in: Leonardo, Vol. 24, No. 3: 321-323.