

# **TERRACED HOUSE TYPOLOGY AS POLIS – SIEDLUNG HALEN AS A LONG-TERM DEVELOPMENT**

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## **INTRODUCTION**

Over the past five decades, steady change in society's life style and demographical transformation have had an impact on the requirements for habitats<sup>1</sup>. The reaction in housing discourses to face these social and ecological needs is dominated by approaches favouring new typologies<sup>2</sup>.

Meanwhile, housing policy in Europe follows the strategy of new constructions to provide demanded housing. But as Jörg Stollman points out, new residential areas are created as replicas of established morphology of the *Gründerzeit*, estimating to gain urban quality by reproducing formal patterns. The results are artificial quarters without identity and diversity<sup>3</sup>, adhering to a lack of planning strategies providing adaptable structures for continuous social and urban conversion.

Both approaches undermine a crucial aspect of housing stock<sup>4</sup>, originated in the Booming Years<sup>5</sup>. Due to lack of time distance<sup>6</sup> there is still a contempt of this architecture and of raw concrete as representing element of the period's *Zeitgeist*<sup>7</sup>. Fifty years later, the life span of these buildings is coming to an end, demanding for resilient concepts of this stock; therefore, the awareness of architects and historians towards the built legacy of the period<sup>8</sup> has increased. For the first time raw concrete appears as renovation measure in residential building stock, requiring new and specific approaches<sup>9</sup> in order to tackle the dissolution of raw concrete. However, for housing, demolition or standardized renewal<sup>10</sup> general chosen solutions<sup>11</sup> are still favoured. Thus, important “mind maps” of generations<sup>12</sup> and also positive evaluated housing resource<sup>13</sup> disappear.

This loss relates particularly to the terraced house typology (*Terrassenhäuser*) of the late 1950s to 1970s. Inhabitants appreciate the high living quality, provided through a specific architectural – sociological approach which facilitates potential as long-term developments<sup>14</sup>. As raw concrete has been disregarded this innovative<sup>15</sup> typology has been affected and therefore strategies for its update are required; on the one hand featuring its intersections and diversity of interior and exterior spaces and on the other hand referring to the human scale generated through concrete elements while following the language of the whole settlement. The design idea and approach of a “human” housing typology<sup>16</sup> emerged as consequence of the critics<sup>17</sup> of concepts in the early post-war era, which were destroying the urban and rural context with *Megastructures* or the spread of mono-functional planning.

## **SPIRIT OF HALEN<sup>18</sup>: PAST - PRESENT - FUTURE**

A masterpiece of this typology is the *Siedlung Halen* (housing development Halen) near Bern/Switzerland. More than five decades after its finish, the *spirit of Halen* is still alive, however, since the past decade, the deterioration of the structure is demanding interventions transforming it into a long-time development. Therefore, it will be analysed as reference for a holistic resilient approach and to raise awareness towards the quality and meaning of raw concrete in the architectural language.

The *Siedlung Halen* was designed by the Swiss architects of *atelier 5*<sup>19</sup> in 1955. In Switzerland this period was marked – similar to other countries of Western Europe and North America – by an economic boom, generating an increasing change in western society and life style. New technology

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was promoted as being a guarantee for progress, prosperity and social welfare. New housing concepts and urban settings represented the transformed environment<sup>20</sup>. However, in the early modernism period, Switzerland was highly influenced by the modernism movement and *Werkbund*<sup>21</sup>; in the post-war period, new constructions in the residential sector were characterised by an absence of international architectural discourse<sup>22</sup>.

Due to the design in the late 1950s, the *Siedlung Halen* pioneered the discourse of *structuralism* and approaches of terraced housing in the Booming Years<sup>23</sup>, proposing an economical and valuable alternative to single family houses, also including the commitment to create an urban community living. Its typology enables the generation of units facilitating privacy inside and outside and communication via community spaces to interact with other inhabitants if required. Car free public spaces and facilities with green areas foster a lively atmosphere of gathering and encourage diversity in the everyday life of the *Siedlung* (housing development). Their design of living space is not triggered by a particular image; on the contrary, the task is approached in a conceptual way, focusing on the needs of users. However, as the inhabitant must be perceived in connection to the community suitable community via urban democracy has to be designed, forming a balanced composition of privacy and community.

The social-political commitment to “apparently non-architectural” aspects<sup>24</sup> of atelier 5 implied the creation of housing based on community coexistence<sup>25</sup> without hierarchy between inhabitants and participation in a democratic<sup>26</sup> way. Discourses about the work of atelier 5 contextualize the project as initial project for housing developments in raw concrete which is marked by their experience and their preference<sup>27</sup> of reinforced concrete. However, raw concrete is not applied to all façades; it becomes the identifying element of the *Siedlung* and therefore exemplifies the significance of required awareness and influence of the material on the creation of identity. In *Halen*, the perception of a whole autarkic structure is shaped by the unifying elements of raw concrete<sup>28</sup> which generates the link of public and private spaces. The statement of one of the children who lived in *Halen* confirms this connectional perception: “[...] if you cross the bridge, than you perceive this structure in the middle of the forest, [...]. That is *Halen* for me.”<sup>29</sup> By creating the main facades and elements in reinforced concrete and also forming the structural system of cross walls in this material, the units can be recognized but are at the same time embedded in a primary structure, forming the frame for the partitions; facilitated by structural property of raw concrete it at same time generates a similarity in the facades (here south facade). The absence of hierarchy strengthens the community and equality between inhabitants.

Particularly in terms of the late 1950s this far-sighted architectural planning of housing as a *polis* facilitates common, useful and adoptable spaces in a unique structure. At the same time, the architects have chosen raw concrete for the main facades not only as unifying but also as innovative material<sup>30</sup>. In the 1950s to 1960s raw concrete made a difference particularly in terms of this new life style; a fact which atelier 5 intentionally used to distinguish their work. They’ve aimed to point to a distinction between this housing development based on a new approach of living style and spirit and the established or wide-spread housing types of the “rural romanticism-revival”<sup>31</sup>. Therefore, raw concrete was subsequently used as atelier 5’s oeuvre<sup>32</sup>.

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Figure 1. Aerial photo of Halen, 1960s, in Burkhard 1986



Figure 2. South façade in 1960s, in Aut. Architektur 2009

In comparison to the traditional built environment of that time, raw concrete is perceived as different material, becoming the outstanding feature of the Siedlung. Thus, the development and its inhabitants are associated with this concrete, implying the connotation of being different which leads to the recognition of a group. In retrospective, Halen children – the first generation of children who grew up in Halen – remember being called “crazy” or “avant garde” when they found out that they were inhabitants of Halen or their parents wanted to live there<sup>33</sup>. The distinction between concrete and common construction outlines a differentiating character, consolidating community spirit<sup>34</sup>. This underlines a sense of belonging to the community and defines the *Halen spirit*. The statements of the *children of Halen* contradict the stigmatization of raw concrete; on the contrary, due to its materialization a proper identity was formed, reinforced by the experience and collective remembrance<sup>35</sup> of space. For atelier 5 however, this dense living implicates the need for an elaboration of housing project regulations; this settlement constitution was passed in Siedlung Halen on an exemplary basis for following housing projects. The constitution determined limits and responsibilities of the individual in a community, pointing out that modifications inside the resident’s units are always allowed as long as they do not have a negative effect on the privacy or liberty of others; tolerance and respect are the main aspects of democratic spirit. Therefore, the initial idea and intention to provide modifications and therefore flexibility of living space is confirmed. Establishing a primary structure

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which connects the whole units is the foundation to guarantee the spatial frame and so the identity of the community. Thus, transformability is one inherent and essential feature of this typology; therefore the conceptualization ‘resilient type of housing’ is ensured.

The unfinished character of raw concrete is crucial and evokes a certain liberty for architectural interaction and the possibility of space adaption, being a material for “objects of utility” and “interpretation”<sup>36</sup>. This design parameter of “identification-in –space through built-environment [which] correspond[s] to ‘ownness’ [...]”<sup>37</sup>, creates the basis for identity formation within the community. This idea resembles the approach of *structuralism*<sup>38</sup>. Milena – one of the Halen children – stated in the interview, that for her the most relevant element for the experience of space was the “simplicity, functionality” of the Siedlung. An important housing reference for atelier 5 was the life style and use of habitats in Mediterranean cities such as Naples<sup>39</sup>, where people use their houses without focussing on the aesthetics of maintenance; on the contrary, they are able to establish their life between given spaces. Perhaps due to Halen’s innovative character she also compares it to “pueblos” and “*Indianerdörfer* (Indian villages)”<sup>40</sup>. This statement echoes a special milieu<sup>41</sup> in Halen, resembling the intended atmosphere of a Mediterranean village<sup>42</sup>, where streets serve as venues for citizens and even playgrounds for children. People gather in plazas as well. For atelier 5, the primary success criterion of a Siedlung is the behaviour of its children. If they use common areas in their naïve and uncomplicated manner, the Siedlung passes the test as a long-term urban setting<sup>43</sup>. The durability of the architectural living concept and valued Siedlung is transmitted by the sign of time – the patina, representing the Siedlung’s common history and validity as a whole, creating the community’s identity over generations; patina is an important quality<sup>44</sup> and has been considered in the conceptual idea of atelier 5 by choosing concrete<sup>45</sup>. Its valued ageing reflects living history and communicates personality and appropriation of the houses by the inhabitants.



Figure 3. South façade in 2010, in Zumbühl 2010

More than fifty years later, life style, ecology and building standards have changed. Like the first generation of the inhabitants’ children the *Siedlung Halen* has aged. However, the settlement is still one of the most valued living spaces in Switzerland.

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But, ageing of construction complicates this potential. Identity loss might be evoked which affects the community. Problems caused by the ageing of the Siedlung have increased in severity. From 1990s onwards owners of Halen have been facing a continuous acceleration of construction problems<sup>46</sup>, provoking a problematic situation for the valued living space.

In the beginning, small interventions were not seen as a problem, but later Siedlung Halen was increasingly perceived as significant architectural patrimony. The icon was considered to be in a worrying condition and there were concerns about its eventual decay. In 2003, the Siedlung was therefore listed in the *Inventar schützenswerter Bauten des Kantons Bern als Objekt kantonaler Bedeutung* (cantonal inventory of buildings in the canton of Bern worthy of protection, declared as an object of cantonal significance). Due to this application the energy requirements for the Siedlung were less strict. However, this protection did not resolve the problem of missing concepts to deal with on-going technological problems<sup>47</sup>.

The problematic situation increased, more damages were detected in the flat roof sealing and in the raw concrete elements. In order to simplify the decision process of renewal works, the cooperative of Halen assigned a committee responsible for the coordination of measures. Thus, in 2013 atelier 5 in cooperation with the authorities of Bern enforced guidelines<sup>48</sup> in order to simplify the detection of important architectural elements. Moreover, the concept was explained to citizens and priorities on intervention schedules were set, also to prevent standard solutions. Furthermore, possible individual modifications were recommended. Yet, suggesting a specific technological methodology for restoration works such as raw concrete was not on their agenda. Such issues were supposed to be contracted before deciding on the reparation or where not to apply outside insulation<sup>49</sup>. Due to missing research and knowledge in the field of the construction industry or due to economic reasons and alternatives, most provided works did not seem to match expected solutions<sup>50</sup>. Due to a lack of agreement in the cooperative or convincing alternatives decision were made delayed and have since been complicating the process for decisions and repairs<sup>51</sup>.



Figure 4. Photo by Michael Blaser, published in *Hochparterre*, Hornung 2014

In the past, *Siedlung Halen* exemplified housing development which embodies the character of unique contemporary urban settlement involving high privacy but also encouraging an intense spirit of community as “collective space”<sup>52</sup>. Due to its architecture and the commitment of its inhabitants and architects the character has survived society changes; assumptions regard an update of the Siedlung’s qualities. As the investigation shows, Halen possesses the demanded resilient structure, the potential to continue providing lively habitat with community spirit and ability for transformations without losing its character.

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*Figure 5. Plaza of Halen, in the 1960s, Bezzola 1972; Figure 6. Children helping “cleaning” the forest, Plaza of Halen in the 1960s, in Wiesmann-Baquero 2005*

Halen is exemplary for a settlement with positive social impact on its inhabitants over generations<sup>53</sup>. The transformability on the one hand and the significance of the materiality as identity-forming instrument on the other hand must be pointed out by architects. Changes in standardized methods for concrete reparations, ground floor options and the meeting of energy requirements should be part of a holistic approach, considering the typological characteristics. Therefore, methodologies and strategies are needed to support inhabitants in transforming their habitats into long term developments.



*Figure 7. Plaza 2010, in Zumbühl 2010*

## CONCLUSION

In housing, outside insulation with standard artificial plaster and flat roof finishing with external roof drainage of metal are examples of these common reparations. This concept leads to the loss of volumetric layers which are necessary for the creation to perceive units and to generate diversity through the joints of formwork and concrete elements in one structure. The difference in concrete surface differs in terms of a homogenous plaster finish due to changing light reflections on the stone mixture of the coarse-pored material. Moreover, the natural character of concrete which implies the creation of patina, neglecting ageing of buildings of this period is ignored. The effects are also deleted

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while applying concrete glaze, due to its characteristic of closing the pores. Therefore, an artificial shiny surface is generated. These strategies demonstrate the maintenance driven approach and also lack of knowledge or budget for specific renovation works. In particular, missing concepts were brought about by the fact that *concrete-cosmetics* are frequently replacing restoration work<sup>54</sup>. Interesting approaches do already exist, as seen in the restoration works on the raw concrete facades of the university building in Aachen (Germany) *Rechenzentrum RWTH Aachen*, which have been executed by the German restaurateur Rochus Michnia<sup>55</sup>. However, such approaches are generally not considered regarding housing stock, ignoring the significance and the role of reinforced concrete as identity creating element. The potentials of concrete would disappear; atelier 5 views the character of concrete as “natural” material which “demonstrates the marks of formation and [does not hide] the signs of ageing, a material which has achieved its final state in its rawness, which can be continuously applied on inner and outer elements. Therefore, the approach of “moderner Raumplan” (modern floorplans) is ensured; thus, Raumfolge (sequence of space) is not a matter of addition of closed boxes but one of continuous interrelation. Concrete is the material [...] which it [sic: nature] assumes; through its simplicity it is capable of acting as organizing material of a whole with high complexity [...].<sup>56</sup> Concrete is not artificial, it ages such as other natural materials and therefore creation of patina is desired and a quality.

New approaches to technologically update the construction stock and professional advice are necessary to develop long term living space. Also economic solutions have to be elaborated to facilitate reliable quality for daily living spaces, while providing the characteristics and therefore the qualities of the Siedlung. As consequence, considerations about renovation works should not convert residential stock into delicate artwork of high maintenance. The concepts have to meet the approaches of *Terrassenhäuser* offering available housing of high quality in a community, and at the same time providing possibilities of modifications within the primary structure.

The aim of restoring raw concrete is to repair technological damages by maintaining the surface of the material, working out the modulation of the elements in the whole composition, and, at the same time, offering a contemporaneous expression; the overall picture of the Siedlung remains and the construction is not affected; however, a patina can be created. Thereby, the perception of aged raw concrete changes from “dirty” into surfaces of quality and persistence<sup>57</sup>, improving the settlement and emphasizes its quality as durable and sustainable habitat for generation that triggers the “mind maps” of inhabitants. Raw concrete plays an important role in creating this perception, achieving a new definition of its meaning in the architectural language and meaning for its criteria in society. Growing awareness for the meaning of raw concrete as identity creating element in *Terrassenhäuser* of the Booming Years could provide the first step towards the evolution of resources into long-term housing developments and therefore to establish a resilient approach in housing policy by considering a re-evaluation of the *Terrassenhäuser* of the Booming Years.

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Figure 8. Children playing in Halen, 1960s, in Wiesmann-Baquero 2005

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### ENDNOTES

(Quotes from German references were translated for this paper by the author)

<sup>1</sup> Karen Beckmann, *Urbanität durch Dichte? Geschichte und Gegenwart der Grosswohntkomplexe der 1970er Jahre* (Bielefeld: transcript, 2015), 475-476.

<sup>2</sup> Peter Ebner, "Die Stadt, die Wohnung und der Raum," in *Housing is back* (New York: Springer, 2002), 10ff. Living spaces have to be adaptable for the needs of changing social-political and ecological parameters in housing.

<sup>3</sup> Jörg Stollmann, "Die wirklich europäische Stadt," *Archithese* 6 (December, 2014): 72.

<sup>4</sup> Uta Hassler, "Offene Fragen," in *Bauten der Boomjahre – Paradoxien der Erhaltung*, ed. Uta Hassler and Catherine Dumont d'Ayot (Zürich: Infolio, 2009), 8.

<sup>5</sup> This term defines the architectural historical period of the 1960 to 1970s in Western Europe, in Switzerland the period is also including the 1980s. For detailed explication see also Uta Hassler, "Offene Fragen," in *Bauten der Boomjahre – Paradoxien der Erhaltung*, ed. Uta Hassler, and Catherine Dumont d'Ayot (Zürich: Infolio, 2009), 8ff, and Martin Behnisch, "Raum-zeitliche Strukturmuster im Schweizer Baubestand," *Ibd.*, 246.

<sup>6</sup> See Angelika Schyma, "Von Kirche bis Kiosk – Denkmal-Inventarisierung im Rheinland," in *Denkmal!Moderne: Architektur der 60er Jahre- Wiederentdeckung einer Epoche*, edited by Armin von Buttlar and Christoph Heuter, *XXVIII. Deutscher Kunsthistorikertag - Bonn 2005* (Berlin: Jovis, 2007), 50-51.

She points out that architects, historians who censured the architectural and urban approach in the late 1970s as "initiator for the destroyer (Zerstörer) of urbanity" and "deleting the urban center (Urbane Mitte)", are still in the positions of evaluating building stock as patrimony nowadays. Due to their rejecting position in the 1970s, attitudes towards the built legacy of the Booming Years have to undergo a shift in judgment. The lack of definition in patrimony definitions of the post war period is also supporting the problem of objective judgement.

<sup>7</sup> Reyner Banham, *Brutalismus in der Architektur: Ethik oder Ästhetik?* (Stuttgart [u.a.]: Krämer, 1966), 27.

<sup>8</sup> Since 2003, the building stock of the 1960s – 1970s is main subject of interdisciplinary symposiums and exhibitions mainly in Germany, Switzerland, Austria and Britain, see for example the call for interdisciplinary concepts in Haspel, Jörg. "1960 plus - ein ausgeschlagenes Erbe? - Resümee.". See also: Karen Beckmann, *Urbanität durch Dichte? Geschichte und Gegenwart der Grosswohntkomplexe der 1970er Jahre*, (Bielefeld: transcript, 2015), 37-40.

<sup>9</sup> See Martin Behnisch, "Raum-zeitliche Strukturmuster im Schweizer Baubestand," in *Bauten der Boomjahre – Paradoxien der Erhaltung*, ed. Uta Hassler and Catherine Dumont d'Ayot (Zürich: Infolio, 2009), 8ff252-253.

<sup>10</sup> Mark Escherich, "Die Aneignung der Ostmoderne durch die Denkmalpflege," in *Denkmal Ost-Moderne*, ed. Mark Escherich (Berlin: jovis diskurs, 2012), 22-23. See also for more discussions about renovation works of buildings of this period: *Ibd.*, Tanja Seeböck, "Die Betonschalen von Ulrich Müther zwischen Ablehnung und Wertschätzung. Imagewandel und Beispiele der Gesellschaftlichen Rezeption," 230-237.



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<sup>11</sup> See for description of strategies in Switzerland: Martin Behnisch, "Raum-zeitliche Strukturmuster im Schweizer Baubestand," in *Bauten der Boomjahre – Paradoxien der Erhaltung*, ed. Uta Hassler, and Catherine Dumont d'Ayot (Zürich: Infolio, 2009), 252-253 and exemplary for the German situation: Ulrike Wendland, "Nachkriegsmoderne in Sachsen –Anhalt. Eine denkmalpflegerische Zwischenbilanz," in *Denkmal Ost-Moderne*, ed. Mark Escherich (Berlin: jovis diskurs, 2012), 89.

<sup>12</sup> See also *Ibid.*, 15. The author describes the loss of a great part of East German's built legacy which is creating a lack in the identification of the contemporary witnesses of the time before the *Wende* (reunification of Germany). This can be applied to international cases of habitat-loss of the Booming Years, due to the similar specific approaches in their design.

<sup>13</sup> Jörg Stollmann, "Hands Off: Urban Mining! A Plea for the Re-Evaluation of Substandard Housing," in *Building from Waste: Recovered Materials in Architecture and Construction*, ed. Dirk Hebel et al. (Basel: Birkhäuser, 2014), 27, 28.

<sup>14</sup> Karen Beckmann, *Urbanität durch Dichte? Geschichte und Gegenwart der Grosswohkomplexe der 1970er Jahre* (Bielefeld: transcript, 2015), 475-476.

<sup>15</sup> Michael Hecker and Ulrich Krings, ed. *Bauten und Anlagen der 1960er und 1970er Jahre- Ein ungeliebtes Erbe?*, ed. Michael Hecker and Ulrich Krings, (Cologne: Haus der Architektur Köln, vol. 4, 2011), 12ff. For proposals of typology see the publication: Riccabona, Christof, and Michael Wachberger, *Terrassenhäuser: Natürliche Terrassenbauformen, Freie Terrassenbauformen, Terrassen als Städtebauliches Element*, ed. Paulhans Peters. Entwurf+Planung 14. (München: Callwey, 1972).

<sup>16</sup> See for example the discourse about the need of planning strategy and approaches in: Smithson, Alison, ed., *Team Ten Primer* (London: Studio Vista, 1968), 47.

<sup>17</sup> In the late 1960s first reaction came against the "destroying" concepts of the Post war period. The climax of these critics was achieved in 1975 in the Year of Patrimony; see for critics: Jane Jacobs, 1961 and Alexander Mitscherlich, 1965 or the exposition "Heimat Deine Häuser", 1968.

<sup>18</sup> Heinz J. Zumbühl, *Siedlung Halen: Meilenstein moderner Siedlungsarchitektur* (Bern: Haupt, 2010), 53.

<sup>19</sup> Atelier 5 was founded in 1955: Erwin Fritz, Rolf Hesterberg, Alfredo Pini and Hans Hostettler worked for the renowned architect Hans Brechbühler in Berne, who was one of the most popular representatives of modern architecture in Switzerland. Their colleague, Samuel Gerber, joined them after returning from working in Brazil for Roberto Burle Max. Hans Brechbühler worked at Le Corbusier's office for seven months. From 1953-1955 Erwin Fritz, Rolf Hesterberg, Alfredo Pini and Hans Hostettler (founders of atelier 5) worked in Brechbühler's office. His thinking was a major influence for them and they called him their "intellectual mentor" (translated by the author), see interview with Hans Hostettler and also for more detailed information of the influences of this office in Heinz J. Zumbühl, *Siedlung Halen: Meilenstein moderner Siedlungsarchitektur* (Bern: Haupt, 2010).

<sup>20</sup> Ottli Gmür, *Stadt als Heimat: Die Stadt in der wir leben möchten* (Niederteufen: Niggli, 1977), 10ff.

<sup>21</sup> See for example: housing development *Werkbundsiedlung Neubühl/ Zurich*, Switzerland, 1928 – 1932.

<sup>22</sup> See also Nancy Wiesmann-Baquero, *Die Kinder der Siedlung Halen* (Bern: Simowa Verlag, 2005), 42-43.

<sup>23</sup> This role is showing the international interest also as reference for upcoming generations, see for more detailed information in Arnulf Lüchinger, *Structuralism in architecture and urban planning* (Stuttgart: Kämer, 1981), 73 and in Heinz J. Zumbühl, *Siedlung Halen: Meilenstein moderner Siedlungsarchitektur* (Bern: Haupt, 2010), 27-29.

<sup>24</sup> Aut. Architektur und Tirol, ed. *konstantmodern: Fünf Positionen zur Architektur; Atelier 5, Gerhard Garstenauer, Johann Georg Gsteu, Rudolf Wäger, Werner Wirsing* (New York: Springer, 2009), 6.

<sup>25</sup> *Ibid.*, 6, 7.

<sup>26</sup> See also for the intention to provide democratic spirit in housing: Smithson, Alison, *Team Ten Primer*, 41.

<sup>27</sup> Jaques Blumer, "Vom Umgang mit Material oder: das Material ist unschuldig," *Deutsche Bauzeitung* 3 (2000): 2, accessed November 27, 2014.

<sup>28</sup> Jaques Blumer, "Vom Umgang mit Material oder: das Material ist unschuldig," *Deutsche Bauzeitung* 3 (2000): 3- 4, accessed November 27, 2014.

<sup>29</sup> Nancy Wiesmann-Baquero, *Die Kinder der Siedlung Halen* (Bern: Simowa Verlag, 2005), 74.

<sup>30</sup> Michael Hecker, *Structurel | Structural* (Stuttgart: TU Stuttgart, 2007), 118.

<sup>31</sup> The critic of a certain revival is reflected in Max Frisch, *Schweiz als Heimat?* (Frankfurt a. Main: Suhrkamp 1990), 146-148.

<sup>32</sup> Friedrich Achleitner, *Atelier 5*. Basel [u.a.]: Birkhäuser, 2000, 17

<sup>33</sup> Nancy Wiesmann-Baquero, *Die Kinder der Siedlung Halen* (Bern: Simowa Verlag, 2005), 74, 104, 119, 121.

<sup>34</sup> See interview with Milena in *Ib.*, 74.

<sup>35</sup> *Ibid.*, 66.

<sup>36</sup> See explanation by Herman Hertzberger: "Language and speech" explained in: Arnulf Lüchinger, *Structuralism in Architecture and Urban Planning* (Stuttgart: Krämer, 1981), 63-64.

<sup>37</sup> Alison Smithson ed., *Team Ten Primer* (London: Studio Vista, 1968), 12.

<sup>38</sup> Michael Hecker, *Structurel | Structural* (Stuttgart: TU Stuttgart, 2007), 118.

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- <sup>39</sup> Aut. Architektur und Tirol, ed. *konstantmodern: Fünf Positionen zur Architektur; Atelier 5, Gerhard Garstenauer, Johann Georg Gsteu, Rudolf Wäger, Werner Wirsing* (New York: Springer, 2009), 24, 26.
- <sup>40</sup> Nancy Wiesmann-Baquero, *Die Kinder der Siedlung Halen* (Bern: Simowa Verlag, 2005), 74.
- <sup>41</sup> See for the definition of milieu the explication of atelier 5 in Aut. Architektur und Tirol, ed. *konstantmodern: Fünf Positionen zur Architektur; Atelier 5, Gerhard Garstenauer, Johann Georg Gsteu, Rudolf Wäger, Werner Wirsing* (New York: Springer, 2009), 24.
- <sup>42</sup> Friedrich Achleitner, *Atelier 5* (Basel [u.a.]: Birkhäuser, 2000), 12-13.
- <sup>43</sup> Anatole du Fresne and Atelier 5, *Siedlungen* (Zürich: Ammann Verlag, 1984), 45.
- <sup>44</sup> Jaques Blumer, "Vom Umgang mit Material oder: das Material ist unschuldig," *Deutsche Bauzeitung* 3 (2000): 3, accessed November 27, 2014.
- <sup>45</sup> Aut. Architektur und Tirol, ed. *konstantmodern: Fünf Positionen zur Architektur; Atelier 5, Gerhard Garstenauer, Johann Georg Gsteu, Rudolf Wäger, Werner Wirsing* (New York: Springer, 2009), 42.
- <sup>46</sup> See articles in national magazines BZ and Hochparterre in 2013 and 2014, for example: Herbert Rentsch, "Die Siedlung ist modern geblieben," BZ Berner Zeitung, May 18, 2013, <http://www.bernerzeitung.ch/region/bern/Die-Architekturkone-hat-Altersbeschwerden/story/31735404>  
René Hornung, "Reihenweise Probleme," *Hochparterre*, March 31, 2014, <http://www.hochparterre.ch/publikationen/hochparterre/shop/artikel/detail/aprilausgabe-2014/>
- <sup>47</sup> The level of preservation and protection necessary when a building belongs to this category resulted in unspecific legal restraints which complicated agreements on interventions even further.
- <sup>48</sup> Atelier 5, *Bauliche Richtlinien für den Umgang mit Materialien und Formen im Inneren und am Äußeren der Siedlung*, Bern, (Kanton Bern, 2013).
- <sup>49</sup> See guidelines of Halen 2013, 114 and also correspondence of author with atelier 5 in 2015, private archive.
- <sup>50</sup> René Hornung, "Reihenweise Probleme," *Hochparterre*, March 31, 2014, <http://www.hochparterre.ch/publikationen/hochparterre/shop/artikel/detail/aprilausgabe-2014/>
- <sup>51</sup> Author refers to correspondence by the author with atelier 5 in December 2014.
- <sup>52</sup> Aut. Architektur und Tirol, ed. *konstantmodern: Fünf Positionen zur Architektur; Atelier 5, Gerhard Garstenauer, Johann Georg Gsteu, Rudolf Wäger, Werner Wirsing* (New York: Springer, 2009), 32.
- <sup>53</sup> *Ibid.*, 72-75 and 129.
- <sup>54</sup> Ueli Habegger, "Vom Fugenbild zur Betonkosmetik. Denkmalpflege und der Baustoff Beton," *NIKE-Bulletin* 1-2 (2012): 40-43, accessed August 8, 2014.
- <sup>55</sup> Rochus Michnia, "Restauratorische Betoninstandsetzung - Eine Alternative zur klassischen Betonsanierung - Berichte zur Forschung und Praxis der Denkmalpflege in Deutschland," in *Denk-Mal an Beton! Material, Technologie, Denkmalpflege, Restaurierung* 16, (2002): 197-202.
- <sup>56</sup> Jaques Blumer, "Vom Umgang mit Material oder: das Material ist unschuldig," *Deutsche Bauzeitung* 3 (2000): 2, accessed November 27, 2014.
- <sup>57</sup> See for example the term „patina“ in patrimony discourse, also described in Cairns, Stephen, and Jane M. Jacobs, *Buildings must die: A Perverse View of Architecture* (Cambridge, Mass. [u.a.]: MIT Press, 2014), 72.

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