In most European countries, the acute housing crisis after World War II was answered by an unprecedented investment in mass housing. In cities that had been heavily destroyed in the war, this prevalence of mass housing often transformed their entire fabric, whereas in places with intact city centres, mass housing mainly affected their periphery, creating overspill and satellite towns. As a byproduct of an accelerated urbanization in general, mass housing also affected places that had been relatively isolated from any direct effect of the war itself (i.e. the US).

In the course of the 1950s and 60s, the critique of mass housing in Europe and the US grew quickly from an outsider position to an important position in societal discourse on residential building. The housing shortage that had dominated the view on housing in most western societies after World War II was remediated by this time, and the shortcomings of mass housing in creating a stimulating urban environment were felt more strongly and not accepted as a necessary evil anymore.

Critique of mass housing came from within and without the architectural profession. In the West-German context, the most prominent critics were Martin Heidegger (Bauen Wohnen Denken), who already in 1951 questioned the premise of mass housing from a philosophical perspective, and Alexander Mitscherlich in Die Unwirtlichkeit unserer Städte (1965), who uttered a similar critique from a sociological standpoint. In the US, Jane Jacobs The Death and Life of Great American Cities (1961) falls in this period, as does John Habraken’s De dragers en de mensen—Het einde van de massawoningbouw (1961) in the Netherlands. Even theorists who were not predominately writing on residential building fit in this list, as Christopher Alexander with his early work Notes on the Synthesis of Form (1964) or Robert Venturi with Complexity and Contradiction in Architecture (1966), considering their insistence on a more varied built environment and their rejection of modernist dogma.
It is remarkable, how in the 1960s and 70s this growing critique of mass housing coincides with a renewed interest in typological studies within architectural discourse.

Type is starting to be used by architects as a means of ‘operative criticism’ in what Manfredo Tafuri calls „a new boom in typological criticism“."¹ Tafuri’s term describes a rather broad tent, in which he subsumes a wide range of architectural thinkers, from the Smithsons to Rossi, from Grassi to Alexander. What unites them is that their criticism is operative, i.e. that they are designing and realizing buildings that are meant as a built critique. According to Tafuri so, their „typological criticism continously takes its problem back to the origin of the architectural phenomenon. These studies are compelled to continously redefine architecture and then, each successive time, to reject it, to salvage it, to upset its meaning: not on the bases of abstract generalisations, but by founding the research for a new quality on the solid ground of the partial questions asked by architecture“."²

In the following comparison of ideas of O.M Unger's and Christopher Alexander from the mid-1970s, we can see how as a typological critique of mass housing alternative concepts come into being that propagate the idea of small-scale collective housing and that try to combine a relatively high density with goals like individuality and segmentation.

A comparison of Oswald Mathias Unger's study The Urban Villa, published after a summer school of Cornell University in Berlin in 1977, and Christopher Alexander's A Pattern Language, published in the same year, forms the core of this investigation. The focus of the comparison is on the concepts that are used to describe small-scale collective housing as either ‘patterns’ in Alexander’s work of ‘type’ in Unger's summer school.

Type

Typological classification can look at various properties of an object. In this comparative study special attention is therefore given to naming these properties in Alexander's and Unger's work. By doing so it takes into account a characteristic of typological classification that architecture historian Adrian Forty describes in Words and Buildings as follows:

„Within architecture the two most common schemes of typological classification have been by use—churches, prisons, banks, airports, etc.; and by morphology—buildings with long hall-shaped interiors, centrally planned buildings, buildings with courtyards, buildings with interconnecting compartments, or with separated compartments, and so on. [...] Much of the debate around ‘types’ has been concerned with how far functional types correspond to morphological types“."³

Urban Villa and Housing Hill

Unger and Alexander are very different in their thinking and their views on architecture. It is therefore remarkable that their ideas on urban residential
building become very similar for a short period in the mid-1970s. This can be shown, when we compare the type of the Urban Villa that Ungers develops in 1977 with students of Cornell University with the type of the Housing Hill from Alexander’s Pattern Language. Obviously A Pattern Language goes much further in scope and ambition than Ungers’ study on the Urban Villa. However, if one focuses on the specific pattern of the Housing Hill (pattern 39), it becomes obvious that the two are very similar (fig. 1).

**Deductive or Historic Reasoning**

Alexander’s patterns are characterized by an internal connectedness and the idea of an increasing differentiation. The first patterns describe the large scale. The higher the number of a pattern, the more it goes into detail. A complex pattern as the Housing Hill with a relatively low number (39) makes reference to a number of smaller scale patterns, such as Your Own Home (79), Roof Gardens (118) or Open Stairs (158), as well as a number of more general patterns, such as Four Story Limit (21). Clearly, Alexander finds this cross-linked way of thinking more apt in describing a design problem than the more conventional and rigid use of type in architecture. Housing Hill is accordingly one of only a few patterns in A Pattern Language that one might also call an architectural type—the others being House Cluster (37) and Row Houses (38). For the Housing Hill Alexander combines a number of patterns and solidifies them into a building type. This type is formed in a generative way from other patterns, i.e. through deductive reasoning.

Ungers in contrast resorts to historical references in his typological studies, a much more classical approach to defining a type. In the case of the Urban Villa this entails mainly but not exclusively looking at built references of villas from the late 19th and early 20th century. One should, however, point out that historical reference is not used to compile a ‘canon’ that needs to be applied by Ungers’ students, but rather as a collection of morphological and organizational ideas that can be freely used and adapted.
Already at this early stage of the comparison, one can see that both Urban Villa and Housing Hill are ‘constructed’. They are based on specific sets of concepts and composed by their authors. They are, however, constructed in very different ways: the Urban Villa from historical precedence, the Housing Hill by connecting patterns. In the further comparison, the implications of this difference will become much clearer.

The Synthesis of single-family home and urban apartment

The most striking parallel between Urban Villa and Housing Hill is that they both aim at a synthesis of single-family home and urban apartment. One might be surprised by the prevalence of this aim from today’s point of view. It shows how important the idea of such a synthesis was in the discourse of the 1970s, when in many western countries (mainly middle class) families moved out of the city towards the suburb or the small town. Ungers addresses West-German reality, when he states: „The city is now competing, particularly as far as the environmental qualities are concerned, with life in the country. The future of the city therefore depends entirely on the solution of the dichotomy between city and country“.

In some detail he weighs advantages and disadvantages of urban and rural life and then poses his central question: „One might ask then, is there a housing type between the two extremes, combining the advantages of the two types and at the same time eliminating the disadvantages?“

For Ungers the turn from mass housing towards the smaller scale of the Urban Villa is not just a theoretical fascination. It goes back to a personal experience of failure. In the mid-1960s, Ungers had built a large housing block in the Märkisches Viertel in Berlin that was fully aligned with the ideas of mass housing. In spite of innovative ideas in the layout of the apartments, the public perceived the new quarter with the densely packed volumes of its buildings as dystopian: „In the end, it is an article in the magazine Stern in July 1970, that gives him a blow, from which he will not recover too soon. Ungers later recalls in conversation: ‘You designed a project in all conscience and tried to solve a problem with great dedication, namely the problem of mass housing, and then you open the Stern one day, and a photo jumps at you on a double page, in which one sees some trash cans in the foreground, in which children sit, and the background is formed by your buildings’“. Needless to say that for Ungers the type of the Urban Villa means a reduction of scale—a search for dense urban housing without resorting to monumental form.

Alexander’s starting point is very different. For him the critique of mass housing is one of the motivations of his work since the early 1960s. Already in one of his earliest publications Notes on the Synthesis of Form (1964) he takes a very critical position towards the lack of complexity in contemporary architecture and its inability to create a stimulating living environment. In this critique scale plays an important role. He sees the designer overwhelmed by the scale of the task: „Driven on his own resources, unable to cope with the complicated information he is supposed to organize, he hides his incom-
petence in a frenzy of artistic individuality. [...] In this atmosphere the designer’s greatest gift, his intuitive ability to organize form, is being reduced to nothing by the size of the tasks in front of him, and mocked by the efforts of the ‘artist’. 7

The basic building block of Alexander’s thinking about dwelling is the individual house. It is striking how he avoids the word ‘apartment’. In A Pattern Language he rather speaks of the House for a Small Family (pattern 76), House for a Couple (pattern 77) or the House for One Person (pattern 78). When he develops a type with dwellings on several levels he describes it as a Housing Hill (pattern 39), rather than an apartment building. Using the single-family home as a basic unit fits very well with the generative structure of the Pattern Language. A house is generated by combining a number of patterns. The combination of a number of houses then generates a new pattern as the Housing Hill. This way of thinking from small to large fundamentally contradicts the idea of an apartment building, in which a larger whole is divided. This contradiction lies therefore not only in the envisioned ‘way of life’, but also in the basic organizational idea of the building. Any residential building that follows the Pattern Language, whether rural or urban, will necessarily feature some elements of the single-family home.

Since both Urban Villa and Housing Hill aim at a synthesis of urban apartment and single-family home, it is not surprising that they also share other characteristics. Three defining ones are building height, density and number of units:

Ungers outlines the scale of the Urban Villa in the following text passages: „The maximum number of floors [of the Urban Villa] should be limited to four or less. In a villa of that size it would be possible to plan apartment units of different size and arrangement and also varying relations to the outdoor space“. 8 The Urban Villa should have “[...] such high density as 150 to 200 people per hectare which is equivalent to the average density in new multi-story developments“. 9 „The housing type of the urban villa contains 6 to 10 (maximum) apartments, each one different“. 10

Alexander gives the following guidelines on scale: „In any urban area, no matter how dense, keep the majority of buildings four stories high or less. It is possible that certain buildings should exceed this limit, but they should never be buildings for human habitation“ 11. „Every town has places in it which are so central and desirable that at least 30–50 households per acre will be living there“. 12 „With 8 or 10 households, people can meet over a kitchen table, exchange news on the street and in the gardens, and generally, without much attention, keep in touch with the whole of a group“. 13

Seeing this synopsis it is evident that we are looking at two very similar building types at least as far as their size as urban building blocks is concerned. One should note that for Ungers the type of the Urban Villa marks a reduction of scale, whereas for Alexander the described type forms the maximum. In the framework of the Pattern Language, a higher density is not desirable.
Ownership

In their attitude towards ownership Ungers and Alexander show further striking parallels. For Ungers creating the opportunity for more home ownership is one of the strength of the relatively small scale of the Urban Villa: „Seen from a political point of view, the promotion of smaller housing types also favors a wide distribution of home ownership and at the same time improves the independence and self-determination of the owner. It represents a shift from the dependent tenant to the independent home owner who can make his own decisions about his personal environment“.14 Ownership is here described as an important prerequisite for the expression of the self.

In A Pattern Language this thought is expressed even more strongly: „People cannot be genuinely happy and healthy in a house which is not theirs. All forms of rental—whether from private landlords or public housing agencies—work against the natural processes which allow people to form stable, self-healing communities“.15

Both text passages show the growing disillusionment with the socialist ideals behind mass housing in the 1970s. In this context, Ungers’ Urban Villa is mainly to be seen as an attempt to offer the middle class an alternative to leaving the city for the suburbs. Alexander is more radical. For him home ownership is a precondition for a healthy life. But he remains vague about what kind of ownership he means. In his writing the demand for ownership contrasts with the rejection of speculative gains. His ideas seem to correspond with the concept of co-operative housing, but this is usually based on a rental model, which he rules out categorically. Given the lack of detail on this topic, it seems fair to say that economic ideas are neither central to Ungers’ nor to Alexander’s thinking, even though both acknowledge their importance. Home ownership seems to be important to them for idealistic rather than economic reasons.

Connection to the Earth

We might be able to point to these aspects, if we look at Ungers’ and Alexander’s thoughts about how their building type is embedded in its environment. Ungers sees the Urban Villa as an answer to the „problem of the close connection between the built and the natural environment and therefore the relation between culture and nature“.16 Hans Kollhoff, who contributes an essay with historical references of villa types to The Urban Villa elaborates on this issue. He sees the type of the Urban Villa capable of acquiring „those qualities as expressed in the 19th century villa, which modern housing failed to provide, such as individual character and ‘sense of place’“.17

A Pattern Language has its own pattern concerning this topic: „Connection to the earth“ (pattern 168). Here Alexander states: “A house feels isolated from the nature around it, unless its floors are interleaved directly with the earth that is around the house“ .18

The relation between nature and culture is a crucial topic for Ungers and Alexander. For the comparison of the two building types it becomes a core
issue, where differences between them start to emerge. While Ungers does not describe the envisioned relation between culture and nature in much detail in the Urban Villa, his referencing of the 19th century villa makes it clear enough that he is not seeking to blur the boundary between the two. Architecture and nature remain in separate realms. In Alexander’s ideas the goal of dislimitation of nature and culture is very present. He is not entirely sure why „connection to the earth“ is such an important pattern, but makes an attempt at explaining it: „Perhaps the likeliest of all the explanations we are able to imagine is one which connects the earth boundness and rootedness of a man or a woman to their physical connection to the earth. It is very plain, and we all discover for ourselves, that our lives become satisfactory to the extent that we are rooted, ‘down to earth’, in touch with common sense about everyday things—not flying high in the sky of concepts and fantasies“.\footnote{Alexander 1977: 787.}

Diversity

Another aspect that can be seen as a motivation for Urban Villa and Housing Hill is the aspect of diversity, both of a building use and its appearance. Both types are a critique of the seriality and perceived boredom of most mass housing. Ungers states: „The housing type of the urban villa is much more responsive to the needs of the user and the personalization of life style than any other type, even the one-family house, at least as far as the social context [is concerned]“.\footnote{Ungers 1977: 4.} One should not underestimate the radicality of this statement. Architecture historian André Bideau points this out when he notes that „[t]he Urban Villa contrasts the paternalism of the welfare state with the advantages of private initiative. Admittedly these ideas remain elitist in West-Berlin, because private building plays only a marginal role in the city before reunification. However, as a model the Urban Villa is visionary: It contributes to the rehabilitation of the architectural project by opening the topic of residential building to the creation of difference, which was taboo in functionalist thought“.\footnote{Bideau 2011: 136; my translation. Original: The Urban Villa stellt der wohlfahrtsstaatlichen Bevormundung die Vorzüge der Privatinitiative gegenüber. Zwar bleiben derartige Vorstellungen in Westberlin elitär, da der privaten Bautätigkeit bis zur Wende eine marginale Rolle zukommt, als Modell ist die Stadtvilla jedoch visionär: Sie trägt zur Rehabilitierung des architektonischen Projekts bei, indem das Thema Wohnungsbaufür die im Funktionalismus tabuisierte Erzeugung von Differenz eröffnet.}

In Alexander’s case, the call for a diverse type is not only motivated by people’s wish to express their personality or by the aim to incentivize personal initiative, but also as a means to allow a more diverse mix of inhabitants: „Encourage growth toward a mix of household types in every neighborhood, and every cluster, so that one-person households, couples, families with children, and group households are side by side“.\footnote{Alexander 1977: 190.}

Do It Yourself

Another point needs to be considered in connection with the wish for diversity: the involvement of the inhabitants in the planning, building and altering of their dwelling. For Alexander, this is an especially important point perhaps the most important reason for his development of a Pattern Language. In the accompanying book The Timeless Way of Building he describes this aspect as follows: „In the town, each building and each garden must also be shaped by an autonomous process, which allows it to adapt to its unique particulars.
This vast variety can only be created by the people. Every house along a road must be shaped by a different person familiar with the different forces peculiar to that place. And within the house, the windows must be shaped by people who are looking out, and seeing what the boundaries of the window need to be. It is therefore not surprising that Alexander’s Housing Hill is permeated by the idea of self-building.

In Unger’s case this excursion into the realm of user involvement is more unexpected. Accordingly, while the student designs in his summer school show an impressive variety of morphological concepts, a real coming to terms with ideas of Do-It-Yourself is not recognizable. That makes it hard to say, how important this aspect really is for Unger. In the foreword for his publication on the Urban Villa he states quite radically that: „[o]ne also has to consider the productive restraints brought about by the industrialization of mass housing. These can only be overcome by the elimination of those constraints themselves, i.e. by the return to more personal production methods better geared toward specific conditions including conventional construction processes and do-it-yourself work “.

Open Stairs—the implications of a generative type
Faced with this impressive congruence of Urban Villa and Housing Hill, one might ask: Wherein lie the relevant differences between the two? Why could Alexander not recur to the same references as Unger, but develop a new type ‘from scratch’?

The answer to this question is surprisingly simple: The open stairs. After an in-depth investigation, the most substantial difference between Unger’s and Alexander’s type seems to lie in the vertical circulation for which Alexander demands open stairs. One might see this as an unimportant detail, but it is the regard for such details that the Pattern Language is built upon. Pattern 158 „Open Stairs“ is a component of the Housing Hill, and it is based on the following observation: “Internal staircases reduce the connection between upper stories and the life of the street to such an extent that they can do enormous social damage“.

In A Pattern Language, such observations are usually followed by a short discourse and finally the proposal for a solution, in this case: „Open stairs which act as extensions of the public world and which reach up to the very threshold of each household’s and each workgroup’s own space solve this problem“.

It is striking how Alexander cuts himself off of a wealth of architectural reference by insisting on this apparent detail. Apartment buildings with an interior staircase are excluded from consideration because of it, even if they have only four stories. This might not happen entirely inadvertently, since it corresponds with Alexander’s fundamental distrust of architectural convention. Does it expose a potential pitfall in using the Pattern Language in architectural design, namely that of adhering to its prescribed patterns fundamentally? In his introduction to A Pattern Language Alexander seems very aware of this danger. He even encourages the reader to adapt patterns:
„And of course, if you want to change patterns, change them. There are often cases where you may have a personal version of a pattern, which is more true, or more relevant for you“. But, understandably, he is reluctant to diverge too much from the patterns he developed when conceiving of a pattern for a multi-family dwelling. In the case of the Housing Hill (fig. 3), this comes at a high cost: for his only really urban housing type, there are very few built references.

Ideals of artificiality and naturality
Ungers’ Urban Villa has equally been criticized for its remoteness from everyday life. Giorgi Grassi, who designed one of the Urban Villas in the Southern Tiergarten quarter at the IBA 87 in Berlin, is often quoted in this context. He calls the Urban Villa a „typologisches Absurdum“, without elaborating further on this opinion. Jasper Cepl picks up on this criticism in his Ungers biography and expands on it: „A number of apartments in a freestanding house surrounded by a garden: That is an experimental concept and certainly a good idea—but not a type, not a form that is shaped by history and experience. The Urban Villa is about as typological as an unité d’habitation“. Cepl contests the claim of historicity that Ungers and Kollhoff are trying to base their type on. This critique is understandable, considering that many of the historical references in The Urban Villa are very unusual, even architectural curiosities. Ungers bases his type not on a grown tradition, but rather on a collection of historical outsider positions.

Having noted this remoteness from conventional architectural practice in Urban Villa and Housing Hill, one should not overlook the actual goals of their authors. In Ungers case, the artificiality of his type might well be intended: „An architecture [...], that does not draw its topic from itself, is like an image, that limits itself to being a photographic likeness. The topic and the content of architecture can only be architecture itself“. Ungers insists on the self-referentiality of architecture. For architectural design this opens a wealth of possibilities, that he formulates in his 1982 book Morphologie / City Metaphors: „If, however, physical reality is understood and grasped as an analogy of our imagination of this reality, then we pursue a morphological design concept and turn facts into phenomena, which as all real concepts can be expanded and compressed“. It becomes clear, what Ungers means with this, when one looks at the student designs from his summer school. In the publication of the Urban Villa, the student projects are shown in two diagrams (fig. 4 and fig. 5), one showing the morphological concept, the other showing the final design.

Comparing the two isometric diagrams of each student design, one quickly understands what Ungers means with the term ‘morphological design concept’. The concept diagrams express the fundamental morphological idea of a design and give already a fairly precise idea of entrance gestures, atriums or terraces. The step towards the final design mainly entails adding a more realistic facade division and thereby suggesting how the designed form might be
inhabited. The morphological concept remains very visible, even in the final designs. It is obviously very important to Ungers that all villas have strong abstract formal concepts that are not based on questions of building technique or purely functional considerations. The villas are made from formal components, but these components are not the same in each student design, and their composition varies widely. Ungers is evidently not looking for a universally valid language, but rather for a collection of morphological possibilities. As he writes 5 years after publishing the Urban Villa: „It is always a fundamental process of conceptualization of an independent diverse and therefore varying reality by the use of imagination, metaphors, analogies, models, signs, symbols and allegories“. Ungers is not looking to blur the line between culture and nature. Dislimitation is not his topic.

Herein lies the big difference to Alexander. For Alexander, an essential quality of successful architecture is that it is ‘alive’. This is a hard to grasp quality, which is why he also calls it ‘quality without a name’. Via comparisons and metaphors, he attempts a description of this quality in The Timeless Way of Building, also calling it ‘fire’: „And when a building has this fire, then it becomes a part of nature. Like ocean waves, or blades of grass, its parts are governed by the endless play of repetition and variety, created in the presence of the fact that all things pass. This is the quality itself“. Here natural-"ity is made the ultimate goal.

The dislimitation of built and natural environment is shown to be the basic objective of A Pattern Language—an objective that withdraws architecture from the kind of conceptualization that Ungers describes. For Alexander building and dwelling is a process, in which the individual as inhabitant, builder and planner plays a great role: „Places which have this quality, invite this quality to come to life in us. And when we have this quality in us, we tend to make it come to life in towns and buildings which we help to build. It is a self-supporting, self-maintaining, generating quality. It is the quality of life. And we must seek it, for our own sake, in our surroundings, simply in order that we can ourselves become alive. That is the central scientific fact in all that follows“. It is specific to this way of thinking, that it wants to enable to make strong value judgements. In this thinking designs can be right or wrong, judged by whether they have the quality without a name or not. While this might make the quality without a name seem like a moral dogma, for Alexander it is a ‘scientific fact’.

**Conclusion**

At about the same time as Ungers and Alexander are making the typological studies discussed in this article, Manfredo Tafuri describes how type is used by his contemporaries as an instrument of criticism in what he calls ‘typological criticism’. He notes the interest in a “rigorous theorization of architectural problems” among his contemporaries and describes two currents in this theorization that resemble the ones we have seen in Urban Villa and Housing Hill:

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32 Alexander 1979: 137.


34 Tafuri 1980: 172.
"At this point the research divides into: (1) studies such as Alexander’s and those of many other American theorists, based on mathematical methods of examination, selection and assembly of data, with the intention of reaching a sort of architectura ex machina; (2) studies, on the contrary, like those of Rossi and Grassi, that work on rational criteria of description, classification and manipulation of the constant laws of architecture, in order to establish logical and unified methods of analysis and planning."  

Having compared Alexander and Ungers it is clear that Ungers can be seen as an exponent of Tafuri’s second category (like Rossi and Grassi). One might question if Tafuri’s categorization does Alexander’s work justice. However, the division he sees between the two types of research seems valid and can also be pointed to in the examples of Housing Hill and Urban Villa. For in spite of the many things they have in common, the comparison of the two types ultimately points to the deeper philosophical difference between Alexander’s positivist and Ungers’ idealist position. Without referring specifically to Alexander Ungers describes these opposite positions in Die Thematisierung der Architektur: ‘When Schopenhauer writes in his treatise „The World as Will and Representation”: ‘The world is representation’, he means that there is no object in itself, just a subject, that sees the object and perceives it. [...] Related to this thinking is ‘morphology’, which in the time of humanism precipitated theories on morphological idealism. While the completely opposing school of thought of pragmatic positivism relies on analyses, facts and partial aspects, i.e. the empirical method, morphology looks for a greater idea, that links all aspects into one overall concept’.

The 1970s are an exciting period in the field of typological studies, when these different positions did not only exist, but were pursued with astonishing critical awareness. Comparing two positions that are at their core as irreconcilable as the ones of Alexander and Ungers bears the risk of showing them just talking past each other. In the case considered in this article, however, we see that even these positions have a common ground, which can be explored.
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Literature


Ungers, O. M. (1982): Morphologie, City Metaphors, Köln: Verlag der Buchhandlung Walther König

Figures

Fig. 1 Top: Ungers 1977: title image, © O. M. Ungers / UAA Ungers Archiv für Architekturwissenschaft; Bottom: Alexander 1977: 214, © Christopher Alexander / The Center for Environmental Structure; montage by the authors.

Fig. 2 Top: Alexander 1977: 396 © Christopher Alexander / The Center for Environmental Structure; Bottom: Alexander 1977: 119, © Christopher Alexander / The Center for Environmental Structure; montage by the authors.

Fig. 3 Alexander 1977: 213

Fig. 4 Ungers, Kollhoff, Ovaska 1977: 55

Fig. 5 Ungers, Kollhoff, Ovaska 1977: 57

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