Josef Frank and the history of architecture: Gothic and the Renaissance, Leon Battista Alberti and Albrecht Dürer in architectural discourse on *Neues Bauen* at the beginning of the 1930s

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‘History exists not to be correctly recognised, but to deliver raw material for scientific and artistic work from which we might gather what we need.’

**Introduction**

The reflection on history constitutes one of the central issues in the theoretical work of Josef Frank (1885-1967), one of the most influential figures of Viennese architecture in the interwar period. ‘Dissenting voice’ in the German discussion on architecture between the end of the 1920s and his emigration in 1935, Frank belonged however to the core institutions of modernism. Founding member of the CIAM, leading figure of the Austrian Werkbund, Frank proposed an alternative vision of modernity based on a profound reflection on classical tradition.

Frank’s engagement with history starts with his education at the Technische Hochschule in Carl König’s milieu and the writing of his doctoral dissertation on Leon Battista Alberti in 1910 – not included in any of the following of Alberti’s bibliographies.


In Frank’s theoretical work, a paradigmatic case study for the use of historiographical categories in the discussion of modernity is *Architektur als Symbol. Elemente deutschen neuen Bauens* (1931). Reviewed as ‘less than systematic’ by contemporaries, as ‘unpleasant’ and ‘acid’ by interpreters, *Architektur als Symbol* provides one of the most complex analyses of modern architecture ever written. To argue his position, Frank devotes approximately two thirds of the book-length essay – an uninterrupted discourse on modernity artificially organised into chapters – to a re-writing of architectural and cultural history. Frank’s narration strongly and explicitly moulds the entire historical course in order to assign modern architecture a determined place in it and to argue his critique of Neues Bauen. My contribution focuses essentially on one aspect of Frank’s historiographical construction: the opposition of classical tradition and gothic sketched at this point, which proves itself determining for his critique of German functionalism and for the foundation of modern architecture in the context of Frank’s entire theoretical production.

The first and most salient aspect in Frank’s approach to history is a declared operational use of it, an attitude that is rather common in the theoretical works of architectural modernity. In a more circumscribed Viennese context, precedents are also to be found in the closest milieu around Frank. It is in the written work of Oskar Strnad and Oskar Wlach – in particular in the doctoral thesis defended by Oskar Wlach in 1906 about polychrome cladding of Florentine proto-Renaissance – that historical knowledge emerges as an instrument to intervene in contemporary discourse. In his ‘flowing and clear writing, carried by intelligence and artistic sensitivity’, Wlach uses principles that he derives from his analysis of Florentine

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4 Long, *Josef Frank*, 127. Long argues that ‘it was precisely (…) carefully constructed ideological systems that Frank in fact was rejecting’.


7 Frank, *Architektur als Symbol*, 125.


medieval and renaissance incrustation to deliver a sharp critique of the work of the influential Baurath Otto Wagner. Frank’s position is however decidedly more radical in the entanglement of history and present situation and has probably no parallel in contemporary contributions. ‘We no longer want to take the view of the historian who can recognize what is good and bad or what is authentic and what is fraudulent, who understands and forgive all. It is no longer enough [if] we want to give expression to our clear will.’

It is probably this engagement that leads to an extraordinary superposition of historical past and present. ‘Our time is all of history, as it is known to us. This notion alone can be the basis of modern architecture.’ Moreover, it is historical knowledge – and not scientific, as commonly assumed in the theory of modern movement – that constitutes the distinctive core of modernity. Throughout the entire essay, historical discourse is not separable from comments on the contemporary situation. Continuous temporal shifts are a distinctive mark in the writing. An example for this inextricable link between history and present can be seen in an excerpt from a passage describing the literary soul of the nineteenth century and its search for national styles: ‘[The will to stagnate] was also expressed in the fact that a style was standardised for use in certain kinds of buildings with particular functions, which in essence is still done today, despite attempts to disguise it – for the literary age lives on as the journalistic age.’

The impossibility of excluding history from the analysis of present has its counterpart in the impossibility of discarding the present in the analysis of history, to abandon the ‘(wrong) meter of our time’ in every piece of historical writing.

In Architektur als Symbol, the historical dynamic appears to follow conventional schemes. In Frank’s narration, the historical development of architectural forms goes through periods of enrichment and ‘decline’, concluding...
with abrupt changes of direction. Although contextualised and relativised, the notion of style is still in use.

The forms of every age begin simply and end in ever-greater opulence. The cause of this phenomenon is pleasure in variety, the *horror vacui*, but also the increasing wealth of that people or caste whose appearance and seizure of power established the new age and who, having grown rich in peace, is now defending the existing order against the new.\(^{16}\)

Some passages from Frank’s history of antiquity and the shift from late antiquity to middle age provide a significant example of the application of this historical schema.

The temple sprang from the collective will [Wollen] of the Greek people as Athena from the head of Zeus; or the beneficence of the Gods destroyed all evidence of any preliminary and developmental stages that preceded the perfect form. But these – if they ever even existed – were certainly nothing other than a determined pursuit of the only (yes, the only) perfection that has ever been achieved. The temple emerged without regard to material and function.\(^{17}\)

In the transplantation of Greek forms in Italy, their ‘organic evolution’\(^{18}\) continued until the definition of the Tuscan order, probably ‘the highest form that could still be vital as an abstract means of expression’.\(^{19}\) The following passage, in Frank’s narration, sheds light on what is likely to come after reaching this ‘highest form’. However, the arguments are not assertive:

Yet, can we speak of a ‘decline’ of architecture? That is really only possible in such times in which attempts are made to try to feign something through forms that have already become untrue and in which the means cannot be found to express something vital. Thus the eclectics are always wrong.\(^{20}\)

‘Revolutions lead to antiquity’. The circularity of history

We could follow Frank’s arguments in the description of Late Empire as a ‘degradation of art to an intellectual, material luxury for the few’\(^{21}\) and the origin of German medieval art from late antique *Volkskunst*.\(^{22}\) For our point, it is noteworthy

\(^{16}\) Frank, *Architektur als Symbol*, 105.
\(^{17}\) Frank, *Architektur als Symbol*, 55.
\(^{19}\) Frank, *Architektur als Symbol*, 63.
\(^{20}\) Frank, *Architektur als Symbol*, 63.
\(^{21}\) Frank, *Architektur als Symbol*, 63.
\(^{22}\) Frank, *Architektur als Symbol*, 65.
that this process of evolution, decline and rebirth\textsuperscript{23} is not lineal but follows rather a circular schema:

The clear parallel between Late Empire and baroque is in fact a first example of an insisted and consistently developed idea in Frank’s narration: history follows a circular course and the end of the 1914-18 war should mark the beginning of a further cycle.\textsuperscript{24}

This circularity does not, however, exclude ‘foreign influences’ and both baroques are characterised by the intervention of \textit{forces majeures} – the influence of Middle Eastern art in the case of late antiquity and China, in the case of 17th-century baroque.\textsuperscript{25}

Gothic architecture is then introduced as a period of decadence, as the necessary ‘catastrophe’,\textsuperscript{26} succeeding late antique opulence. In his description, Frank uses powerful metaphors. Gothic buildings are ‘embalmed corpses’,\textsuperscript{27} ‘blood-drained shadows of former strength’.\textsuperscript{28} As a reaction, a revolution of great abruptness, force and energy\textsuperscript{29} starts a further cycle with the conscious invention of a style: ‘[it] is the first example for which there is real historical evidence of the invention of a style that abandoned an ostensible tradition.’\textsuperscript{29}

With the Renaissance, the cycle of European architecture was actually complete; we were once again back where we began; the old tradition had been recovered. What then followed was essentially nothing other than that which followed antiquity, in particular the formal expansion of architecture’s expressive means and their liberation from doctrinaire prescriptions.\textsuperscript{30}

There are two principal results of Frank’s historiographical construction, two main consequences in the circularity of history that he discusses: the historical relativity of modernity – and its values – because of its insertion in a cyclical course, and above all the absence in this continuity of any nineteenth-century \textit{caesura} that could justify a reflection on a new machine era and its forms. Neither the industrial revolution nor the 1914-18 war, as mentioned above, could be interpreted as an interruption. The latter is rather considered as the departure point of a further cycle, the sole solution after the rapid – circular – flow of unsatisfactory formal experiments at the turn of the century. The direction to be taken after this new start is obvious: antiquity.

That [formal research at the beginning of the century] does not sufficiently satisfy is demonstrated by the fact that our building types and systems

\begin{itemize}
  \item Frank, \textit{Architektur als Symbol}, 67.
  \item Frank, \textit{Architektur als Symbol}, 93.
  \item Frank, \textit{Architektur als Symbol}, 67.
  \item Frank, \textit{Architektur als Symbol}, 69.
  \item Frank, \textit{Architektur als Symbol}, 73.
  \item Frank, \textit{Architektur als Symbol}, 73.
  \item Frank, \textit{Architektur als Symbol}, 73.
  \item Frank, \textit{Architektur als Symbol}, 85.
  \item Frank, \textit{Architektur als Symbol}, 85.
  \item Frank, \textit{Architektur als Symbol}, 85.
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supplanted each other with remarkable speed, until the years of the revolution following the war led once again back to antiquity. The time has come to consciously acknowledge this.\(^{31}\)

Frank’s reading of the immediate past after the 1914-18 war points out German ‘false assumptions’\(^{32}\) which create a new formal language and abandon the multiple formal possibilities of a classical anthropocentrism; as I will further argue, these ‘false assumptions’ impose a formal uniformity upon a classical *varietas*.

In Frank’s historiographical reading, the invention of machine does not imply a new direction in the course of history and aligns itself perfectly with the intellectual trajectory of antiquity. With this statement, Frank is healing the nineteenth-century scar which is one of the principal historiographical points of modernity: ‘Machines are products and essential outcomes of the intellectual trajectory of the ancients, who made men the focus of all thought and the measure of all things.’\(^{33}\) The idea is reiterated in various passages, persistently and explicitly linked to contemporary architectural discourse:

> It is entirely mistaken to believe that the machine age has created a new spirit, because this goal has always been sought, and to anyone who understands the full context, everything that has been created in Europe since the earliest days, comes together wonderfully into a total image, without his sense for harmony compelling him to sit in a tubular chair because he has a bathtub.\(^{34}\)

Frank goes even further: classical tradition is the only appropriate expression of every revolutionary age because ‘revolutions lead to antiquity’\(^{35}\) in their circular revival. In Frank’s dialectic, the same *raison d’être* of modernism is called into question. The formal solutions of modernism, in fact, are not the only appropriate expression of a revolutionary and mechanical oriented age.

\(^{31}\) Frank, *Architektur als Symbol*, 93.
\(^{32}\) Frank, *Architektur als Symbol*, 125. ‘Do we want to start over again from the beginning? And again with false assumptions? For the European, as I have shown here, only a single system of forms can become his own, one with which he is inextricably bound ( … ) furthermore, we have seen that antiquity and its system stands in opposition to all others, be they related or not; in any case, they are laden with tendencies that are not our own. All of these forms are therefore also not suitable to serve as springboards that propel us headlong into the unknown. These forms, granted us by fate, are as distinct and at the same time as diverse as the human form [eindeutig und dabei so vielfältig wie die menschliche Gestalt] and could express every character and every feeling; a quest for new ones is hopeless.’

\(^{33}\) Frank, *Architektur als Symbol*, 137, but also 133: ‘the machine age is not new, but rather was always cultivated in Europe, because we have always thought along the same lines, and that is what distinguishes the Europeans from other races.’

\(^{34}\) Frank, *Architektur als Symbol*, 151-153.

\(^{35}\) Frank, *Architektur als Symbol*, 95, also 29, 61, 99.
'There is no such thing as traditionlessness.'³⁶ No interruption is possible in history; this statement is an even more radical assertion than the continuity of thought – the cultural belonging to an antique cultural tradition – espoused by Adolf Loos at the beginning of the century.³⁷ This historiographical continuity without caesurae, and the impossibility to abandon any tradition, constitute a main point in the Viennese response to the search for a modern formal expression.

**Gothic and classical tradition as metaphors to intervene in the architectural debate**

In this general historiographical context, the opposition of the gothic and classical tradition appears as a successful metaphor of the contemporary situation that traverses the entire book.³⁸ The attention to classical tradition is one of the most apparent issues of the book, reiterated with an unusual clarity and consistency that we can define as almost didactic.

The beginning of modern architectural history will be dated to around the eighth century B.C., from the time when the first Doric column was noted, which constituted the anthropomorphic form of [material]. (…) We will most likely never be able to separate ourselves from the wavelike, surging intensity of the ancient tradition. Violent and hopeless attempts have been made to this end, and they have increased recently, but I do not believe that they will amount to anything more than trendy fads. What I mean here by ancient tradition is not the use of column and cornices and all other dated forms – which incidentally will never completely disappear – but rather the pursuit of the organic design of inanimate material; this tradition will dominate our culture as long as man is the measure of all things.³⁹

The category of gothic emerges already in the very first pages of *Architektur als Symbol*, as a negation of the organic architectural growth of a Greek temple. In Frank’s construction, the ‘intuition’ of the Greek temple openly counters intellect and intellectual ornamentation of the Gothic cathedral.⁴⁰

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³⁶ Frank, *Architektur als Symbol*, 133 and 132 for the German original: ‘Traditionslosigkeit gibt es nicht.’
³⁸ In many passages the two concepts are switched or superposed, see for instance Frank, *Architektur als Symbol*, 139: ‘The iron bridge and the gothic are the poles of our new architecture that presumes to bring together both in thousands variations.’
⁴⁰ Frank, *Architektur als Symbol*, 83. See below, footnote 45.
Standing in complete opposition to such a free creation is the line of thought of the gothic mode of construction, in which structure and effect complete, excuse, comment and spiral into the air while calling upon a peculiar, scholastic logic in considering themselves to be mutual necessary. This is an overture to the very restrictive mode of thought and work of new architects who direct the designer in all that he does according to the question of ‘to what end?’ compelling him to have justification for everything.\textsuperscript{41}

From the above passage a first character of gothic emerges, in which Frank individuates a profound similarity with \textit{Neues Bauen}: the decorative use of structure – and function, in the case of \textit{Neues Bauen} – as an effect in itself. The switch of function and mean is typical for both gothic and German contemporary architecture.\textsuperscript{42}

In various excerpts, Frank insists upon the structural / decorative aspects of gothic, on its – even harmonious – system centred on ‘symbols of static’.\textsuperscript{43} Frank recognises in the pointed arch, ‘the primeval form of the arch’ the symbol of gothic \textit{par excellence}, a symbol of the weakness of a system that has no function save its own realisation. The parallel to contemporary German architecture and the superposition of Gothic past and German present is latent in the entire discussion: ‘When used superfluously, structure or function appears ornamental even to us today.’\textsuperscript{44}

Furthermore, Gothic and German functionalism share a more obvious aspect: their common Germanic roots.\textsuperscript{45} In both cases, a local limited character, a nationalistic attitude is present, which stands in contrast to the internationalism and openness of classical tradition, and the latter’s possibilities for formal enrichment. If the repertoire of classical architecture - because it is commonly understandable,

\textsuperscript{41} Frank, \textit{Architektur als Symbol}, 59.
\textsuperscript{42} Frank, \textit{Architektur als Symbol}, 127 for the ambiguity of ‘Mittel’ and ‘Zweck’ in German contemporary architecture.
\textsuperscript{44} Frank, \textit{Architektur als Symbol}, 81 and 83: ‘The pointed arch thus seems to me to be such a characteristic symbol of the gothic, for contained in it is the entire helplessness and weakness of this architecture that, despite all structural boldness, it cannot divest itself of. This pursuit – attempting to prevail over material, which in Greece succeeded through intuition – here continually invents new and elaborate structures that have no function save their own realisation. ( … ) All those overly ambitious structures ( … ) were a sort of intellectual ornamentation, and still are today wherever structure is supposed to replace ornament. When used superfluously, structure or function appears ornamental even to us today.’
\textsuperscript{45} Frank, \textit{Architektur als Symbol}, 77: ‘It is certain that that which is characteristic of medieval art is in large part an achievement of Germanic peoples; but it is wrong to try to deduce from this a Germanic style that is now supposed to be unique to these peoples, even beyond renaissance. Ultimately, the Germanic tribes also made classical culture their own without their own independent development.’ Also Frank, \textit{Architektur als Symbol}, 99.
international and therefore modern – admits renaissances, this is not possible for
gothic, because this ‘style’ is ‘too dependent on fleeting trifles’.46

The latent geographical aspect of the duality is better highlighted in a
passage of an unpublished essay dated to the mid-to-late 1940s. The point here is
the drawing of a border between two different architectural cultures, Mediterranean
antique and Germanic, an enduring dichotomy that has a profound impact on the
contemporary situation. It is significant that, at this precise historical moment, after
the 1939-45 war, Austria is explicitly considered to belong in the south:

The border between old and new cultures roughly follows the border of the
roman empire, along the Rhine and the Danube; nations west of the Rhine
and south of the Danube belong to the old culture and have traditions
derived from antiquity. One of these traditions consists of the unconscious
understanding of the essence of form ( … ) Lands of new culture started
using the forms of antique only after their century long evolution without
contribution to its progress and the short time after their adoption was not
enough to create a tradition. For this reason, it is difficult for them to create
forms that could appear obvious.47

46 Frank, Architektur als Symbol, 77 and 95: ‘The reawakening of Gothic forms is limited at the
most to peripheral frivolities, to curiosities isolated from life and art that a small scale seem
like fun for a while but then get old.’ See also 77-79: ‘A renaissance of gothic can never be
possible, even if we are impelled up into the unknown once again by a similar feeling of
longing and distress, gloominess and disconsolation. ( … ) I want to explain this difference
in very simple terms. When a house is built today in the Roman style (style in its most
popular understanding) along with its trappings like columns and cornices, etc., it will not
attract attention and does not seem the least bit unmodern. On the other hand, any “Gothic”
building with pointed arches, etc., will give an onlooker the immediate impression: “This is
a Gothic house”.’ Also Frank, Architektur als Symbol, 121 for renaissance of gothic as a
‘delusional’ belief.

47 Josef Frank, 7. Kunstgewerbe und Aberglauben, manuscript, Hermann Czech archive: post
1945, folio 1. ‘Quer durch Europa verläuft die Grenze zwischen alter und neuer Kultur
ungefähr längs des Rheins und der Donau; das waren die Grenzen des römischen Reichs; die
Länder westlich des Rheins und südlich der Donau gehören der alten Kultur an und haben
 Traditionen aus der Antike; eine dieser Traditionen besteht im unbewussten Verständnis für
das Wesen der Form, ohne das es keine Kunst geben kann ( … ). Die Länder der neuen
Kultur haben die Formen der Antike nach derer Jahrtausende langen Entwicklung
übernommen ohne selbst an Ihnen mitgearbeitet zu haben; die kurze Zeit nach deren
Übernahme war nicht ausreichend eine Tradition zu bilden; es ist deshalb dort schwer für
irgend etwas eine selbstverständlich scheinende Form zu erfinden.’ This passage recurs,
almost literally, in Walter Sobotka, Principles of Design, typescript, Walter Sobotka
architectural records and papers, Subseries D, box 4, Avery Library Columbia University:
‘finally typed in 1970’, 44.
The two systems are not mutually permeable to each other. German culture arrived late to the classical tradition, and assimilated it as a closed system, without contributing to its growth and development.\textsuperscript{48}

In parallel with gothic,\textsuperscript{49} German contemporary architecture emerges through \textit{Architektur als Symbol} as a national and merely economic phenomenon, pretentiously international, trying to impose in Europe a German narrow-minded and bourgeois \textit{Weltanschauung}.\textsuperscript{50}

To conclude, there is a further aspect in the dichotomy of gothic-classical tradition: the countering of Gothic mysticism – the same mysticism that also informs the machine age – and Renaissance scientific thinking.\textsuperscript{51} In his arguments, Frank does not deny the powerful consequences of mechanical production in western society and culture. His criticism focuses on the mysticism related to the use of machines\textsuperscript{52} and on the supposed necessity to adapt the formal repertoire for the new instruments of production: ‘steel is not a material; it is a worldview.’\textsuperscript{53}

Reference to the mysticism of gothic recurs in many passages, along with reference to the mysticism of the machine age. Architecture of feudalism and scholasticism, gothic ‘gave power to those who knew the answer to the riddle’,\textsuperscript{54} in contrast to scientific openness of renaissances. Leon Battista Alberti, in late writings, appears as the most influential representative of this scientific worldview, which does not persist in contemporary architecture. An unpublished passage on Alberti’s letter to Matteo de’ Pasti better explains Frank’s vision.

In 1454 Alberti wrote to his master builder who had proposed to open a circular window [in the façade of San Francesco in Rimini]. I do wish the man in the trade knew his job. I ask him, why do they open up the wall and weaken the structure to make windows? For the sake of the light. Well, if you can let me have more light with less weakening the fabric, aren’t you making a mistake giving me an inconvenience of this kind? From right to left of the round window the wall is broken into, and the arch the size of the

\textsuperscript{48} Frank, \textit{Architektur als Symbol}, 99-105: 99. ‘German Renaissance was more an acceptance in good faith of hitherto unencountered forms which needed not to be developed for a second time.’

\textsuperscript{49} Frank, \textit{Architektur als Symbol}, 119, on gothic as national style during the nineteenth century.

\textsuperscript{50} Frank, \textit{Architektur als Symbol}, 119 on the cosmopolitanism still lacking in the so-called ‘international style’; Frank, \textit{Architektur als Symbol}, 125 on economic goals of new German architecture and functionalism as a decorative element.

\textsuperscript{51} Frank, \textit{Architektur als Symbol}, 87: ‘At first, the Tuscan Renaissance (…) had ideals that seemed to be oriented toward the past; this appears all the more notable, since in each instance scientific progress, traditionlessness, and modern technology are stressed as its exemplary characteristics.’ Frank, \textit{Architektur als Symbol}, 89 for renaissance as a ‘scientific, anti-metaphysical mode of thought’. For the dictatorship and the religion of the machine, \textit{Architektur als Symbol}, 49, for its mysticism, Frank, \textit{Architektur als Symbol}, 123, for its romanticism Frank, \textit{Architektur als Symbol}, 159.

\textsuperscript{52} Frank, \textit{Architektur als Symbol}, 137.

\textsuperscript{53} Frank, \textit{Architektur als Symbol}, 133, also 49 for the ‘dictatorship of the machine’.

\textsuperscript{54} Frank, \textit{Architektur als Symbol}, 89, also 91 for the mystical foundation of construction rules in mason guilds.
Caterina Cardamone  Josef Frank and the history of Architecture...

A true Lebendigkeit is the strongest issue of classical tradition that Frank highlights in opposition to the literary dryness of gothic / Neues Bauen and its detachment from life.57 “I should choose” said the shadow of Achilles to Odysseus when he visited the underworld, “to serve as the hireling of another, of some portionless man whose livelihood was but small, rather than to be the lord over all the dead that have perished”. (… ) Enough with “timeless” art and its eternal values! – for [only] living man epitomizes eternal value.58

Attachment to life constitutes the core of Frank’s classical based anthropocentrism and the vivid principle of modern architecture. In Frank’s vision, man has nothing of immutable ratios that are crucial in Frank’s contemporaries’


56 Frank, Architektur als Symbol, 107, 135.

57 Frank, Architektur als Symbol, 109. It is interesting to note that in this passage classicism is proposed also as a cold literary construction, opposed to the true tradition of antiquity. ‘But how cold and constructed do they appear, these products of a literature that has become space, when compared with the last offshoots of the baroque period, of this organically developed renaissance.’ Following the historiographical approach of the nineteenth century, baroque is still interpreted as the last part of the Renaissance.

58 Frank, Architektur als Symbol, 49-51. It is interesting, in this case, to quote a part of the German original: ‘Weg mit der “zeitlosen” Kunst und deren Ewigkeitswerten! Da nur der lebendige Mensch der ewigen Wert darstellt.’
proportional systems sketched at that time.\textsuperscript{59} In Architektur als Symbol, man is principally an ‘imperfect intention of nature’; ‘We see in all people – this is instinct or tradition – an imperfect intention of nature, an imperfect striving toward one or more forms that are not universal, an average of all people.’\textsuperscript{60} In his Mannigfaltigkeit, his varying and mutable needs, and his Sentimentalität, his average values, man is the centre from which the search for modern architecture’s true principles should emanate.

But indifference towards the incidental, awareness of the diversity of the world, and the recognition that our emotions have value are among the cornerstones of modern life and its symbols, modern architecture. (…) Modern is the house that can assimilate all the vitality of our time and still be an organically developed entity. Modern German architecture may be objective, practical, correct in principle and sometimes even appealing, but it remains lifeless.\textsuperscript{61}

Lebendigkeit has therefore two aspects: varietas – the core of classical tradition and essence of classical anthropocentrism – and mediocritas – to be understood as moderation and the search for the vital compromises of a via media, as an alternative to pathos and striving towards singles extremes of German modern architecture. Both are the inspiring principles of true modern architecture.\textsuperscript{62} The reading of De re aedificatoria proves to be determining for the definition of this particular anthropocentrism; varietas and mediocritas are central categories in Leon Battista Alberti’s writing.\textsuperscript{63} Their reception at the beginning of the 1930s contributes substantially to the definition of the ends of modern architecture.

Frank’s interest in Alberti depends on his academic education at the Technische Hochschule. In 1910, as mentioned above, Frank wrote a dissertation, Ueber die ursprüngliche Gestalt der kirchlichen Bauten des Leone Battista Alberti, in which the original projects for Alberti’s religious buildings are reconstructed in 20 watercolour plates and sensibly discussed.\textsuperscript{64} The originality of Frank’s reading of Alberti’s work emerges through a comparison with Max Theuer’s doctoral dissertation.


\textsuperscript{60} Frank, Architektur als Symbol, 51.

\textsuperscript{61} Frank, Architektur als Symbol, 135 and also 167 for a similar passage. For the distance of German architecture from life, also Frank, Architektur als Symbol, 131.

\textsuperscript{62} See Author, ‘Varietas’, passim.

\textsuperscript{63} For varietas, see Martin Gosebruch, ‘”Varietà” bei Leon Battista Alberti und der Wissenschaftliche Renaissancebegriff’, Zeitschrift für Kunstgeschichte, 20: 3, 1957, 229-238. Alberti discusses the notion of mediocritas in De re aedificatoria, IX, 1.

dissertation, presented in 1911 at Technische Hochschule – it is a work that will constitute the basis for the first German translation of *De re aedificatoria* published by Hugo Heller in 1912.\(^{65}\)

The presence of Leon Battista Alberti in *Architektur als Symbol* is mostly implicit.\(^{66}\) The *trattatista* is explicitly quoted just once in the text – an excerpt from the prologue of the Italian version of *De Pictura* (1435), which constitutes, together with *De re aedificatoria*, a fundamental reference for Frank.\(^{67}\) Alberti’s *concinnitas* is mentioned in two passages as ‘the most important secret of any architecture’.\(^{68}\) In the concluding lines of the essay, a crucial reference to both *varietas* and *concinnitas* reveals the profundity of Frank’s reflection on the Renaissance and antique principles and their integration in the discourse about modernity.

Men are alike and yet all different from one another. The leaves of a tree are like each other, but we can never find two that are perfectly identical. All men write the same letters, but their writings are so dissimilar that their entire character can be deduced from them, and copying someone else’s writing is prohibited. (…) Whence the whole habit of inventing a new writing all the time when the old one still [has] so many possibilities? We will recognize once more that the ancient teachings of the proportions – the eternal harmony of individual parts among themselves and with the whole – mean the most; that nothing was able to destroy this tradition that was and always will be the essence of every architecture; these proportions whose laws are as steadfast as those of man, who in our age has never changed. Students will not to have to learn any other rules besides those of the ancient tradition, because irregularity, imperfection, and coincidence [Zufälliges] cannot be taught.\(^{69}\)

On the contrary, German classicism – and German *Neues Bauen* – are excluded from this vitality of classical tradition, for Germany does not belong to the antique tradition. Significant for this point is a passage consecrated to the German Renaissance and to Albrecht Dürer.\(^{70}\) With a historiographical argument, by stigmatising the work of the most influential German artist of the Renaissance, Frank denies any possibility, for German contemporary architecture, to participate in defining a vision for modern architecture.

In *Architektur als Symbol*, Frank discusses a page-long excerpt from Dürer’s *Underweysung der Messung, mit dem Zirckel* (1525), with the explicit intention of


\(^{67}\) Frank, *Architektur als Symbol*, 85.

\(^{68}\) Frank, *Architektur als Symbol*, 91.

\(^{69}\) Frank, *Architektur als Symbol*, 181-183.

\(^{70}\) This passage has already been commented by Lindegren, *Theory and Polemic*, 100.
comparing ‘[Dürer’s teachings] with those of Italian theorists’.\textsuperscript{71} The chosen passage is about the construction of a ‘victory monument after vanquishing rebellious peasants’.\textsuperscript{72} It begins with some remarks about German taste and comments on the introduction of a ‘new style or fashion’ in Germany.\textsuperscript{73} Frank’s review leaves no doubt as to his judgement on German Renaissance architecture.

Dürer was already afflicted by the schism, causing him to waver between unbridled fantasy and rigid rules, the value of which he had learned in Italy. This is the typical fate of the German artist who as a result mostly falls when it comes to harmonious creation. His triumphal procession of Emperor Maximilian exhibits ideas similar to his rules; they are considered literary, just like any modern approach to architecture. It does not matter whether this sort of approach stresses content or structure or function or economy; in any case it is not formal and thus not architecture; in any case it is unilateral and thus not modern. The entire German Renaissance built in this way; at its core, it was nothing but a disguised gothic style whose forms were embellished according to new fashions because they were no longer convincing.\textsuperscript{74}

German classicism has nothing to do with the true tradition of classical culture, a living tradition based on \textit{varietas}. This notion would become a leitmotif in Frank’s late writings. His repeated statements on this issue – targeting in some passages the architecture of Mies van der Rohe\textsuperscript{75} – should suggest a search for a different category; a different adjective to describe Frank’s reflection on classical tradition, for a classicist Frank is not.

The context of contemporary architectural critique: a reactionary-progressive Gothic

Josef Frank’s ‘humane Architektur’\textsuperscript{76} is based on classical tradition. His particular reception of antique and renaissance principles of \textit{varietas} and \textit{mediocritas} are utterly


\textsuperscript{72} Frank, \textit{Architektur als Symbol}, 103.

\textsuperscript{73} Frank, \textit{Architektur als Symbol}, 101.

\textsuperscript{74} Frank, \textit{Architektur als Symbol}, 103-105.

\textsuperscript{75} Josef Frank to Walter Sobotka, Stockholm 13 October 1963, in Sobotka, \textit{Principles of Design}, 405: ‘The meaning of the theory of Mies v. d. Rohe of having to expose the construction is in fact only a variety of ancient classicism of showing the symbols of construction.’

\textsuperscript{76} Hermann Czech, Sebastian Hackenschmidt, ‘Die Einrichtung der Wohnung von Karl und Hedwig Tedesko’, in Thun-Hohenstein, Czech, Hackenschmidt (eds.), \textit{Josef Frank. Against Design}, 40. See also Josef Frank to Walter Sobotka, France (sic), 9 September 1961, in Sobotka,
original in the context of contemporary architectural discourse, whose interest in classical repertoire is mostly limited to the discussion of proportional issues.\textsuperscript{77} If in a Viennese milieu we could easily find a precedent for Frank’s attention to the continuity of classical thought in Adolf Loos’ writings,\textsuperscript{78} it is more delicate to provide circumstantiated references for Frank’s anthropocentrism based on the classical principle of variety. Frank’s ‘humanistic’ standpoint, could partially find a Viennese parallel in Oskar Strnad’s conferences held in the years around the 1914-18 war,\textsuperscript{79} with their open references to renaissance models and the concreteness of Masaccio’s representation of man. To some extent, Adolf Behne’s critique of Deutscher Werkbund and its ideals is also the expression of a humane vision of architecture.\textsuperscript{80}

Only during the 1939-45 war, however, in a completely different cultural context, with Belgium under German occupation, did Victor Bourgeois explicitly refer to a renaissance tradition – the humanism of Erasmus of Rotterdam – as a worldview countering contemporary barbarism.\textsuperscript{81} Even rarer are contemporary references to \textit{varietas}, apparently limited to the Viennese context. In an article published in 1921, it is Frank’s younger colleague Walter Sobotka who traces an explicit link between the longing for variety in contemporary furnishings and antiquity as a model.\textsuperscript{82}

More generally, what Frank’s contemporaries appreciate in the classical south is rather a Mediterranean \textit{Stimmung}, the purity and abstraction of perennial

\textit{Principles of Design}, 396: ‘There are now, it seems to me, two types of architecture, “human” and “inhuman”, the latter consists in fulfilling an abstract principle persistently; a rather evil example are Mies and his followers.’

\textsuperscript{77} This argument is discussed by Frank especially in his late correspondence with Walter Sobotka, published as appendix to Sobotka’s \textit{Principles of Design}.

\textsuperscript{78} On this issue see Robert Trevisiol, ‘Gli ultimi giorni dell’antichità’, in Giovanni Denti (ed.), \textit{Adolf Loos. La cultura del progetto}, Roma: Officina, 1996, typescript kindly provided by the author.


\textsuperscript{82} Walter Sobotka, ‘Das Möbel als Gerät’, \textit{Innendekoration}, XXXII, Juni 1921, 176. See also Oskar Wlach, ‘Zu den Arbeiten Josef Franks’, \textit{Das Interieur}, XIII: 6, 1912, 41-45. Wlach describes Frank’s interiors – by first reviewing and publishing them – as open to any further enrichment, any further accidental elements that the life of their inhabitants could bring to them. The parallel is to the polychrome variety of Italian \textit{cinquecento} paintings (Wlach, ‘Arbeiten Josef Franks’, 43).
rules in ‘vernacular’ architecture that constitute one of the major issues of orthodox modernism.\textsuperscript{83}

The central point to be discussed here, however, is the dichotomy of classical tradition and Gothic architecture, proposed by Frank, the opposition of two architectural cultures, as a means of interpreting the contemporary architectural situation. As Christopher Long has pointed out, the dynamics of Deutscher and Österreichischer Werkbund at the beginning of the 1930s could partially explain the genesis of \textit{Architektur als Symbol} and Frank’s intentions in his virulent attack to German Neues Bauen. \textit{Architektur als Symbol} is in fact a pamphlet resulting from the polemic arisen by his intervention \textit{Was ist modern?}. Frank’s speech, at the occasion of the Werkund’s meeting in Vienna on 25 June 1930,\textsuperscript{84} was published in the official organ of the Werkbund (\textit{Die Form}) provoking strong reactions of its other members.\textsuperscript{85}

The delicate political situation at that point should also ultimately be taken into account as one of the possible reasons for Frank’s \textit{prise de distance} from the German ‘mentality’.\textsuperscript{86} It is evident in his late writings that the classical category of \textit{varietas} could also have political implications. The category is charged with values of pluralism and democracy lacking in the architecture of every totalitarianism – German functionalism included.

I do not wish to infer that people who do not have a Weltanschauung do not necessarily have aesthetical preferences, but principles are different and, under certain circumstances, they can also lead to abstract ideas. They reject closed systems because they have more pleasure in diversity and variety [Mannigfaltigkeit und Abwechslung] rather than in absolute beauty. Their political form of state is what we now currently define as democracy.\textsuperscript{87}

Frank’s dichotomy is inevitably bound to be read in the context of a reactionary approach to architecture at that time. Gothic is obviously the German style \textit{par excellence} in a conservative milieu and Mediterranean architecture is

\textsuperscript{84} Long, \textit{Josef Frank}, 120-125.
\textsuperscript{85} Long, \textit{Josef Frank}, 122-125. Among reactions, we find the contributions of Wilhelm Lotz, Roger Ginzburger, Walter Riezler.
\textsuperscript{86} For the reception of middle age in Germany during the 1920s and the 1930s, see Maike Steinkamp, (ed.), \textit{Mittelalterbilder im Nationalsozialismus}, Berlin: Akademie Verlag, 2013.
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discarded as non-autochthonous, ‘un-German’ in its physiognomy, and foreign.88 The target of Frank’s criticism is, however, not German Heimatkunst but left wing German architecture – as well as the agonising German Bauhaus, although it is never openly cited.89 In describing the researches of German functionalism as Gothic ‘trifles’, Frank assigns Neues Bauen to the politically ambiguous background that German modern architecture is countering. No difference exists between the two fronts. What is worth noting is that Frank’s dialectic, despite inverting the polarity of gothic and classical tradition, never questions the cultural and geographical opposition of the two entities. Ambiguous cultural considerations about the ‘physiognomy’ of architecture, therefore, heavily influence the entire architectural discourse of the beginning of the 1930s, their contrasting aims notwithstanding.

In his parallel gothic / Neues Bauen, Frank is referring to a well-known aspect of German contemporary architecture. The fascination with Gothic architecture is an evident aspect of what we could call expressionist tendencies in German architecture. However, Frank associates Gothic to German functionalism, proposing a historiographical reading that seems to be confirmed by recent studies. Gothic informs architectural researches from Bruno Taut Glass Haus for the Werkbund exhibition in Cologne (1914) up to Walter Gropius’ Weimar Haus am Horn in 1923, presented like a cathedral in the hands of medieval donor figures.90 The attention to Gothic architecture is not uncommon in contemporary ‘progressive’ architectural writings, where Gothic is ‘sublimated into the concept of pure abstract’. Frank’s critique calls into question some of the main issues of Gothic’s twentieth-century reception. Gothic has nothing of the organic growth, the Bauwachsen, or of the ‘crystal plant’91 – it is perceived as a dry and literary phenomenon.92 Nor is it revolutionary, as assumed by apologists.93 On the contrary: organic and revolutionary are appropriate adjectives in describing the classical tradition.

**Historiographical Context**

There are different reasons for our interest in Architektur als Symbol’s historiographical context. Josef Frank highlights a link between architectural

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90 Gabriele Bryant, ‘Gothic of the Murdered God: from the Crystal Creed to the Spirit of Abstraction in Modern German Architecture’, in Henriette Steiner, Maximilian Sternberg (eds.), Phenomenologies of the Cities, Burlington: Ashgate, 2015, 190 for the reference to the Bauhaus exhibition postcards designed by Gerhard Marcks in 1923. Bryant’s thesis is that Gothic instances sublimated into the concept of pure abstract in modernist architectural theories during the 1920s.
91 Bryant, ‘Gothic of the Murdered God’, 184.
92 See for instance Frank, Architektur als Symbol, 83.
93 Bryant, ‘Gothic of the Murdered God’, 181. The reference is to Karl Scheffler, Der Geist der Gotik, Leipzig: Insel Verlag, 1917.
historiography and architectural discourse and this link constitutes a central part of his critique of the contemporary situation. The entanglement of historiography and contemporary architectural debate, already put into evidence in some case studies such as Rudolf Wittkower or Le Corbusier, has thus a broader context and constitutes a main issue of Viennese architecture in the interwar period. This entanglement has different aspects. The first point is the deliberate influence of art historians in the architectural debate, an intervention toward which Frank has a critical attitude.

‘Art historians (…) – especially since they have also become journalists – will not stop trying to influence and guide processes that cannot be explained to them’, with ‘ruinous effect[s]’ indeed. Who the ‘journalists’ are that Frank has in mind is difficult to ascertain. In the editorial board of Die Form, some of the collaborators were educated art historians, such as the editor in chief, Walter Riezler, author of one of the most staunch reactions to Was ist Modern?. In Vienna, after the 1914-18 war, Dagobert Frey held the position of Redakteur of Der Architekt.

The second aspect is Frank’s own historiographical background. Frank’s own historiographical references are significant in acquiring a broader perspective on the cultural context of modernity theory in Vienna. An exhaustive analysis of these references in Architektur als Symbol is, however, still to be written. Diverging views are in fact evident in the work of this Austrian architect. Not surprisingly, Jacob Burckhardt is the only art historian explicitly cited when defining the notion of the Renaissance. From Burckhardt derives obviously the idea of continuity of modern history, also present in Adolf Loos’ writings between 1898 and 1913.

References directly emerging from the reading of Architektur als Symbol could be integrated by the rich bibliography of a late typescript by Walter Sobotka, Principles of Design (1970). Walter Sobotka (1888-1972) was one of Frank’s closest colleagues in Vienna – a founding member of Haus & Garten in 1925, with Josef Frank and Oskar Wlach. Frank and Sobotka had an intensive and partially accessible correspondence (1942-65) about classical tradition and proportional

95 Frank, Architektur als Symbol, 119 and 125 on popular art history at the beginning of the century and its relationship with contemporary architectural experiments.
97 Frey is Redakteur from 1919 until 1922.
98 For a first approach Lindegren, ‘Theory and Polemic’. Lindegren refers to works that were successful during the 1920s, such as Egon Friedell, Kulturgeschichte der Neuzeit, München: Beck, 1927-1931 and Oswald Spengler, Der Untergang des Abenlandes, I, Wien: Verlag Braumüller, 1918 and II, München: Beck, 1922.
99 Frank, Architektur als Symbol, 87, 91. On the notion of continuity, depending directly from Jakob Burckhardt, Geschichte der Renaissance in Italien, Stuttgart: Ebner & Seubert, 1868, see also Author, Tradizione classica, 283.
rules. In *Principles of Design*, the intention is, once again, to connect historical knowledge to intervention in contemporary discourse. Sobotka enlarges the historiographical perspective, extensively quoting the work of Julius von Schlosser, Adolf Riegl, Heinrich Wölfflin, Benedetto Croce, Erwin Panofsky, Antony Blunt and Rudolf Wittkover.

The typescript constitutes a fundamental document for the erudite historiographical references of the *Wiener Moderne*. Wölfflin draws Sobotka’s attention because of his ‘distinction between a Northern and a Southern art – German and Italian expressions in art particularly’. This remark could suggest that we could search in Wölfflin a reference also for Frank’s opposition of a Northern and a Southern architectural culture. In *Principles of Design*, Panofsky is appreciated for an excerpt from *The First Page of Giorgio Vasari’s Libro* (1955), in which he ‘illustrates the distinction between type and style symbols, although using other terms’, a central issue in Sobotka’s arguments. Panofsky, together with Wittkover, plays a crucial role in Sobotka’s discussion of proportional systems. We cannot exclude that Panofsky was also a reference for Frank at the beginning of the 1930s. This circumstance could nuance the question about the cultural matrix of Frank’s *Symbole* – whether depending on iconographic studies or on epistemological cues mediated by Frank’s brother Philip, an active member of the Wiener Kreis. In this case, the immediate association is with Ernst Cassirer’s *Philosophy of Symbolic Forms*, published in three volumes between 1923 and 1929 – produced in Hamburg, with the work undertaken in the cultural sciences library founded by Aby Warburg. Recent studies documented a friendship connection between Oskar Wlach and the couple Ernst and Toni Cassirer and possibly also the furnishing by Haus & Garten of an apartment for the couple in Breslau (1927 or ante).

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106 Marlene Ott lists an Apartment Cassirer in Breslau (Ott, *Josef Frank*, 176-177) furnished by Haus & Garten in 1927 or ante. Clients could be Ernst Cassirer and his Viennese wife Toni; the correspondence of Oskar Wlach with his brother Armin documents the ties of friendship that existed between the couple and Oskar Wlach (Ott, *Josef Frank*, 177).
At first sight, probably the most unexpected aspect of Frank’s historiographical references is his attention to the work of Adolf Riegl. Riegl’s name is more often linked to the theories of Viennese Sezession and to the theoretical works of writers such as Hermann Bahr – to a cultural context apparently extraneous to that of modernism. According to a reading that stresses the opposition between both approaches, the generation of Wiener Moderne, on the other hand, is supposed to adhere unconditionally to Gottfried Semper’s vision. There is evidence of a strong reflection on Semper’s theoretical legacy in the Viennese context at the beginning of the century. Oskar Strnad’s and Oskar Wlach’s dissertations demonstrate the depth of interest displayed within the milieu of the Technische Hochschule where archival research shows that the teachings of Der Stil were expressly adapted to the necessities of ex cathedra lessons. Josef Frank’s reconstructions of Leon Battista Alberti’s religious buildings (1910) also bear a heavy cladding, perfectly compatible with Viennese research at the beginning of the century.

In Architektur als Symbol, it is a passage about the origin of Greek temple that attracts attention, as it emphasises a ‘will’ and highlights the victory on material as the most profound essence of classical tradition. In one passage, moreover, Josef Frank explicitly criticises the materialism of the Semper-school: ‘Of course, it could easily be argued in the sense of the structural materialists of the Semper-school that these are structural necessities. But who can determine whether it is not the formal tradition that drives our entire structure within these rules’. These remarks should suggest that Semper’s and Riegl’s reception in Vienna was not reduced to a neat countering of the two figures or to their association with two clearly opposed cultural contexts.

To conclude, an attempt is made to insert Architektur als Symbol in the context of the historiographical reception of Gothic during the 1920s. Probably together with Wilhelm Worringer’s Formprobleme der Gotik, it is Dagobert Frey’s Gotik und Renaissance als Grundlagen der modernen Weltanschauung (1929) that marked Frank’s historiographical vision. The idea of a cultural continuity – already clearly

109 Cardemone, Frank and Alberti, 37.
110 Frank, Architektur als Symbol, 177.
111 Formprobleme der Gotik, first published in Munich in 1911 (Piper), had three editions during the 1920s, in 1920, 1922 and 1927. For Worringer’s reception, Magdalena Bushart, Der Geist der Gotik und die expressionistische Kunst. Kunstgeschichte und Kunsttheorie 1911-1925, München: Schreiber, 1990. Wölfflin’s Italien und das deutsche Formgefühl, however interesting for the countering of a Northern and a Southern art, is published in the same 1931 and could have no influence on Architektur als Symbol.
enucleated by Jakob Burckhardt – is reiterated here, in a context which for different reasons is even closer to Frank. ‘Our aesthetic sense, our scientific image of the world, our astronomical model of the universe, our sense for justice, our ethics, the laws of the state, our diplomacy: everything has its roots and its profoundest foundation in the Renaissance.’

Dagobert Frey (1883-1962) constitutes in fact one of the principal connections between the Vienna school of history of art at the University and the milieu of architects. He registers at the Technische Hochschule in 1902 and is listed among Karl König’s students – two years older than Josef Frank, it is not to be excluded that they could have personally met. After a doctoral dissertation on architecture in Dalmatia presented in 1909 at the Technische Hochschule, and a thesis on Bramante’s drawings for San Pietro in Rome at the University (1916) under the supervision of Max Dvořák, he is Redakteur of Der Architekt immediately after the 1914-18 war.

In Frey’s approach to art history as Geistesgeschichte, it is above all his remarks on the relationships between art and science that could have attracted Frank’s attention. In 1920, Frey gives two conferences at the Österreichisches Museum für Kunst und Industrie: one about the birth of the Renaissance and its relationship with natural sciences and the second about Copernicus’ vision in baroque’s Raumgestaltung. As mentioned above, there are recurring remarks in Frank’s writings about the scientific worldview of the Renaissance. The conviction that a new astronomical model could determine the design of new spaces is also a recurring subject in Frank’s late writings and it appears, with a clear reference to Frank’s example, in Sobotka’s Principles of Design also. In Frank’s late writings are the laws of Kepler that are linked to the elliptic form of the dome in baroque architecture.


114 Payne, ‘Rudolf Wittkower’, 330 footnote 59 remarks that also Sigfried Giedion’s Space, Time and Architecture could depend on similar arguments derived by Dagobert Frey and that the Austrian historian could also be responsible for the representation of modern architecture as a part of an historical flux.

115 Cardemone, Tradizione classica, 285 and Frey, Gotik und Renaissance, XIII.

116 Frank on elliptical domes in baroque architecture in Josef Frank, Kunst und Wissenschaft, manuscript, Hermann Czech archive, post 1945, folio 18: ‘Die Form der Kuppel als Symbol des Universum veränderte sich gemäss neuer wissenschaftlichen Entdeckungen, die sich wohl nicht unmittelbar durch Anschauung, wohl aber durch Vorstellung erfassbar waren. Als die keplerischen Gesetze lehrten dass sich die Planeten in Ellipsen um die Sonne drehten, so folgte die symbolische Form des Weltalls getreulich diese Lehre, es wurde aus
Conclusions

Josef Frank’s strong training in architectural history at the Technische Hochschule and his doctoral writing on Alberti are crucial circumstances for his entire theoretical work and, in particular, for the choice of historiographical arguments in his criticism of Neues Bauen. Gothic, as a category to stigmatise German contemporary architecture, provides a powerful metaphor for his direct criticism not only of the conservative Heimat tendencies but also of the left-wing researches of an orthodox modernism. It is not to be excluded that, at this precise historical moment, Frank’s remarks could already target a political and ideological context. Apparently, moreover, in his dichotomy of gothic and classical tradition, Frank simply inverts a successful schema widely discussed during the 1920s.

In more general terms, history is an influential instrument in framing the architectural discourse for entire Wiener Moderne generation. Contemporary historiographical works constitute the basis of Walter Sobotka’s theory of proportioning in Principles of Design. His references provide a fundamental document for the circulation, use and adjustment of historiographical works in the architectural discourse. On the other hand, first-hand research in Florentine proto-renaissance gives the norms to be applied in contemporary praxis, as in the case of Oskar Wlach.

Together with the already documented reception of Gottfries Semper’s theoretical legacy it is now the impact and relevance of other possible sources, such as the work of Jakob Burckhardt, Alois Riegl, Erwin Panofsky, Heinrich Wölfflin, that has to be taken into account in the Viennese architectural context.

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der Kugel zu einem Ellipsoid.’ Also Sobotka, Principles of Design, 57, with an explicit reference to Josef Frank for the link between Kepler’s laws and elliptic form of the dome.