

## E. H. GOMBRICH'S ADOPTION OF THE FORMULA FORM FOLLOWS FUNCTION: A CASE OF MISTAKEN IDENTITY?

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**Abstract:** This article is a longer note on what is a minor problem in the oeuvre of a great art historian. Its theme is E. H. Gombrich's use of the formula form follows function as the summary of his commonsense approach to the problem of style change. Although I am not sure how interesting this inquiry is in an art historical context, from the perspective of my own field of design history and of modernist design theory, Gombrich's adoption of the formula constitutes an intriguing problem.

**Keywords:** design theory; "form follows function"; modernism; functionalism; E. H. Gombrich; H. W. Janson.

In what follows, I first describe the problem in more detail. Then I proceed to present a short outline of the history of the formula, and argue for the metaphysical nature of the thinking behind it. Thereafter I discuss six examples of Gombrich's own brief references to the formula made between 1953 and 1999. Then I comment on the American art historian H. W. Janson's parallel promotion of the formula in the early 1980s. I will thereafter present some examples of authors outside the art history field that in the past 60 years or so have emphatically rejected the slogan both in its descriptive and its prescriptive sense. In conclusion I will comment on what I see as a paradox of Gombrich's adoption of the wording of a slogan, whose original meaning was almost exactly opposite to the one Gombrich ascribed to it.

### A Mismatch

The three-word alliterative formula, known from the world of practicing modernist architects, appeared to be as witty and effective a précis of Gombrich's commonsense methodological approach to factors behind stylistic changes, as his own dictums, making comes before matching, creation before reference, or scheme before correction, from his *Art and Illusion* of 1960. But this employment of "form follows function" as a summary of his own anti-formalist, anti-expressionist, metaphysics-free methodological position was at odds with the meaning of the original formula.

I submit that that there was a case of mismatch between the commonsense meanings of the dictum ascribed to by Gombrich, and the original metaphysical meaning of the dictum in the modernist theory of design. While Gombrich adopted the phrase for his own purposes as

an *observer's conclusion*, that implied that form *always* follows function, within the modernist movement the phrase, in spite of its declarative form, had always stood for a *designer's imperative*. From the modernist perspective, the established (i.e. historicist/eclecticist) architectural practice up until the Second World War was deemed a case of forms *failing* to follow functions. Historicists were seen as falling short of producing an authentic modern formal language, allegedly pertaining to the Modern Epoch, and the modernist formula was a command aimed at redressing the situation. In Gombrich's commonsense usage the term function referred furthermore to *down-to-earth human ends*; he considered the phrases "form follows function" and "the end determines the means as synonymous" (Gombrich 1999, 14). For modernists, the term function was really a reference to *metaphysical, supra-human ends*, instituted by entities such as God, "Nature", or "History".

It was therefore not surprising that when Gombrich, in 1976, started to harness the formula to support his anti-metaphysical approach to the questions of stylistic change, where the key approach, as he put it, was to see "living people [as] responding to certain expectations and demands" (*ibid.*, 48), there always was a latent tension between the descriptive and prescriptive meanings of the formula, and ultimately between the commonsensical and the original, metaphysical understandings of the phrase.

## A Very Short History of the Modernist Formula

Before I proceed to comment on the instances of Gombrich's employment of the formula, let me first shortly outline the history of the formula, and of its reception, and discuss briefly its metaphysical makeup and problems encountered in design practice (cf. Michl 1995). The formula form follows function (originally consisting of four words: form *ever* follows function) was coined by the American architect Louis Sullivan in an article published in 1896 where he presented his approach to skyscraper design (Sullivan 1979). As the following quotation from the article suggests, the formula was not the simple matter-of-fact statement it appeared to be. Sullivan wrote:

Whether it be the sweeping eagle in his flight or the open apple-blossom, the toiling work-horse, the blithe swan, the branching oak, the winding stream at its base, the drifting clouds, over all the coursing sun, form ever follows function, and this is the law... It is the pervading law of all things organic and inorganic, of all things physical and metaphysical, of all things human and all things superhuman, of all true manifestations of the head, of the heart, of the soul, that life is recognizable in its expression, that form ever follows function. This is the law (*ibid.*, 208).<sup>1</sup>

Some of the ideas behind the formula may have come from the architecture related criticism published, mostly before 1850, by the American neoclassical sculptor Horatio Greenough, and collected in a book shortly after Greenough's death (Tuckerman 1968). Sullivan returned to this design philosophy in 1901-02 in a series of 52 essays, called "Kindergarten chats", published

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<sup>1</sup> The passage above is preceded by this text: "All things in nature have a shape, that is to say, a form, an outward semblance, that tells us what they are, that distinguishes them from ourselves and from each other. Unfailingly in nature these shapes express the inner life, the native quality, of the animal, tree, bird, fish, that they present to us; they are so characteristic, so recognizable, that we say, simply, it is 'natural' it should be so... Unceasingly the essence of things is taking shape in the matter of things..." (*ibid.*, 207-208).

in an architectural weekly. The essays were styled as a kind of Socratic dialogue between a wise architect (Sullivan himself) and his inquisitive pupil. In 1924 Sullivan published his memoirs under the title *The Autobiography of an Idea*, where the slogan was briefly mentioned (Sullivan 1956). In 1935 the first Sullivan monograph, written by Hugh Morrison (1971) was published, where both Sullivan's architecture and his design philosophy were extensively, though apologetically discussed. It was only then, after the mid-1930s that the slogan started to be widely known and talked about in the architecture and design community in the USA. In Europe the formula (in contrast to the design philosophy behind it) seems to have been virtually unknown before the mid-1930s. In 1937 a book by Walter Curt Behrendt on *Modern Building*, published in New York, discussed in a chapter on "The role of America" for the first time both Sullivan and Greenough, and spread further the knowledge about Sullivan's philosophy and his formula, especially after the European edition of the book came out in London a year later. It was only after the Second World War, in 1947 that selections of key texts from both Greenough's and Sullivan's writings were made separately available in book formats in the USA (Greenough 1947; Sullivan 1979). The Sullivan selection made both his 1896 article and all the installments of his "Kindergarten chats" widely and easily accessible for the first time.

### **Modernist Design Metaphysics and its Problems**

The writings of both Greenough and Sullivan leave no doubt that the form follows function formula stood for a metaphysical conviction that took for granted that the world was pre-designed by some sort of supra-human intelligence, and that every problem had its own pre-ordained solution.<sup>2</sup> The formula was not about human intentions, human tasks, and human demands understood as keys to the resulting formal solutions. It was on the contrary about the absence of human intentions, human tasks, and human choices in the birth of forms. It implied that for each function there was one, single, definite solution. The human designer was to give up his own, as well as his client's, aesthetic ends, and instead aim to become a medium through which the pre-ordained solutions would find their true expression. Not surprisingly, the phenomenon of the market, with its mechanism of supply and demand, was in this context seen as a deplorable distraction.<sup>3</sup>

Part and parcel of this metaphysical conviction was a belief in what could be called "semantic automatism". Forms that had followed functions were claimed to obtain, automatically, a visual identity of their own. Greenough (1947, 63) put it this way:

the unflinching adaptation of a building to its position and use gives, as a sure product of that adaptation, character and expression... As its first result, the bank would have the physiognomy of a bank, the church would be recognized as such, nor would the billiard room and the chapel wear the same uniform of columns and pediments.

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<sup>2</sup> It could be fittingly described as an "irrational belief in the predetermined course of history which Karl Popper has dubbed 'historicism'", as Gombrich put it in another context (1999, 268).

<sup>3</sup> This may have been the main attraction of modernist design metaphysics. The designer who manages to become a channel for the idea acquires the status of a godly messenger, set apart from the rest of the rank and file. The formula confirmed that he should ignore the wishes of these unenlightened people, and go forward with his designs whether people like it or not. If the rank and file hated the results it could be understood as a sign that the designer was on the right track. The formula provided the designer with the desired artistic autonomy. That may perhaps explain why designers have been so fascinated by the idea.

A bank, in other words, would be recognized as a bank not as a result of the conventional signs that the architect deliberately imparted to the structure; instead, its recognizable “bankness” would simply be a by-product of the architect’s solution to the building task, because this “bankness” was intrinsically present in the task in question. The result would be an appearance that was due to the structure, which would also be recognized by the public as such. Sullivan’s way of putting the same idea (which can be read as a paraphrase of his form follows function formula) was:

Every problem contains and suggests its own solution. Don’t waste time looking anywhere else for it. In this mental attitude, in this mood of understanding, lies the technical beginning of the art of expression (Sullivan 1979, 43).<sup>4</sup>

I mention specifically the belief in semantic automatism, which the formula implied, because this was an idea that Gombrich himself repeatedly rejected as equating expression with communication (see also Gombrich 1978, 56-69; Gombrich 2002, 233).

Greenough’s and Sullivan’s ideas belonged to the childhood of the formula. When a growing number of architects and designers embraced, from the 1920s onwards, the metaphysical philosophy that informed the formula, they found that despite giving them vast psychological comfort, the metaphysical claims proved to be of zero help in the process of design itself. Attempts to extract any hands-on method from the belief went mostly in the direction of dividing the building’s functions into several categories to be served by architectural structures and to determine the form best adapted to each. As this process still proved elusive and the results less than satisfactory, concentration focused, from the late 1930s onwards, on the notion of function itself: perhaps it was too narrow, and should be widened to include more than just the technical functions. In this context the notions of mono-functionalism (bad) and multi-functionalism (good) emerged.<sup>5</sup> However, such attempts at making the notion of function more inclusive were bound to lead to a blind alley, because what the architects were bumping their heads against was the metaphysical foundation of modernism. The primary end of modernism was not the satisfaction of the *human* users. As the term modernism suggests, the goal was not to satisfy human clients no matter whether they preferred a modern or traditional look for their buildings. On the contrary, modernist architects aimed at an authentic expression of the Modern Time that was expected to contain no trace of historicism and eclecticism because their alleged

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<sup>4</sup> Other illustrations of Sullivan’s statements implying such “semantic automatism” in the world of pre-ordained forms: “Now, it stands to reason that a thing looks like what it is, and, vice versa, it is what it looks like... outward appearances resemble inner purposes. For instances: the form, oak-tree, resembles and expresses the purpose or function, oak; the form, pine-tree, resembles and indicates the function, pine; the form, horse, resembles and is the logical output of the function, horse; the form, spider, resembles and is the tangible evidence of the function, spider. So the form, wave, looks like function, wave; the form, cloud, speaks to us of the function, cloud; the function, rain, indicates the function, rain; the form, bird, tells us of the function, bird; the form, eagle, is the function, eagle, made visible... in man-made things... the form... knife, [means nothing more nor less than] the function, knife; the form, axe, the function, axe; the form, engine, the function, engine” (Sullivan 1979, 44).

<sup>5</sup> A Czech modernist architect, Karel Honzík, for example started in the late 1930s and in the 1940s to discuss the need to include “psychological” functions, during WWII of psychological functions in architecture, and Jan Mukařovský, in his introduction to Honzík’s collection of essays supported him: M. claimed that thinking in terms of functions is “the typical way of thinking pertaining to the machine age” (Mukařovský 1946, 7) but the tendency to “mono-functionality while characteristic for architecture is an early evolutionary stage, which now needs to be developed further in the direction of “plurality and diversity of functions” (*ibid.*, 13). See also Holenstein (1981); Michl (1991).

*supra-human* client, the modern epoch, had no place for forms born in pre-modern times. Expanding the notion of function while keeping the modernist design metaphysics intact would not help. The only way out of the dead end was to abandon the metaphysical idea insisting that an epoch was entitled to its own unique aesthetic expression, intrinsic to the epoch itself. Only replacing the idea of pleasing metaphysical clients with the idea of gratifying human users might help.<sup>6</sup> Meanwhile, a way out of the impasse was sought in multi-functional options (Gelernter 1993; 1995). It was possibly during this period, and when the fact that modernism stood on metaphysical foundations was ignored, and the form follows function formula tended to be interpreted as a down-to-earth, commonsense dictum in need of some minor revisions, that Gombrich came into contact with the dictum.<sup>7</sup>

### Gombrich's Adoption of the Formula 1953-1999

Gombrich's first explicit use of the form follows function formula appeared (in my estimation) in his scathing review of Arnold Hauser's *Social History of Art*, published in 1953. In censuring Hauser for interpreting style as a signal of social or intellectual change, Gombrich writes (*ibid.*, 91):

For we know that "style" in art is really a rather problematic indication of social or intellectual change; we know this simply because what we bundle together under the name of art has a constantly changing function in the social organism of different periods and because here, as always, "form follows function".

What Gombrich obviously meant by using the formula here was simply that the end determines the means.<sup>8</sup> Why he did not limit himself to the latter expression and why he opted instead for the form follows function formula remained as unclear here as in all of his subsequent uses of it.

If I am not mistaken, in Gombrich's *Art and Illusion* (1960) the formula form follows function does not appear. The closest the author comes to the wording of the dictum are his formulations in Part II of the book, on "Function and Form". In connection with his discussion of Byzantine art, Gombrich for example writes of "... the simple question of how the function of an image will influence its form" (Gombrich 1960, 101), and further, "Art has again become an instrument, and a change of function results in a change of form" (*ibid.*, 125).

It was only in his booklet on *Means and Ends: Reflections on the History of Fresco Painting* (1976)<sup>9</sup> that Gombrich explicitly summarized his own methodological approach to the origins of

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<sup>6</sup> But this modernist architects have not been prepared to do, probably because having a client that is able to express his wishes only through architects themselves was a unique way of legitimizing their own aesthetic choices as historically necessary. That was probably the reason why the multifunctional solutions were considered promising.

<sup>7</sup> It is possible, and perhaps even probable that, as Ján Bakoš (2001, 349) suggests, for Gombrich the formula stood for "the old idea of the old rhetoric". However, at least to my knowledge, Gombrich himself never hinted at such connection.

<sup>8</sup> In Gombrich (1999, 14) the author explicitly stated that he regarded the *form follows function* formula and *the end determine the means* formula, as synonyms.

<sup>9</sup> The essay was later included in his book *The Uses of Images* (1999) under the title "Paintings on walls: Means and Ends in the History of Fresco Painting".

style in visual art, as presented in his *Art and Illusion*, with the help of the form follows function formula. He wrote (*ibid.*, 14):

In this chapter, I shall present some second thoughts on a topic I first discussed in my book *Art and Illusion*: this was the idea, which is more familiar in the theory of architecture than in the criticism of painting, that form follows function, or that the end determines the means.

It seems that when Gombrich now introduced the formula again he considered its wording, just as when he first mentioned the formula in 1953, as nothing else than another way of saying that the end determines the means. Now, however, he added that the slogan was related to “the theory of architecture”, though he does not suggest whether he had in mind a theory employed by architectural historians, or one professed to by practicing architects. He apparently still seems to consider that relation immaterial, in spite of adopting the wording of the signature slogan of the modernist movement.

After the sentence quoted above, however, he immediately proceeds to qualify both the *form follows function* and *the end determines the means* formulas in this way:

Of course, slogans of this kind can never have more than heuristic value: they draw attention to the kind of question the historian should ask in confronting the monuments of the past. Admittedly, no human action and no human creation are likely to serve only one end; we often find a whole hierarchy of ends and of means. But we can also discern a dominant purpose without which the event would not have happened at all. Moreover, in human affairs, means can easily become ends, as it is indicated in the formula “Art for Art’s Sake” (*ibid.*).

Gombrich’s qualifications, applied to the wording of the formula, seem to amount (in my formulation) to this: “*Form does follow function, but it never follows only one function; there is a whole hierarchy of functions, though a dominant one can be discerned. In addition, forms and functions interact, and functions can also follow forms.*” These qualifications were obviously meant to refine his methodology. But do they not at the same time necessarily impinge upon the modernist slogan itself? Had the dictum form follows function never been devised as *the* gist of the modernist philosophy of design, and had it never been used and generally perceived as such, prior to Gombrich’s adoption of its wording as a summary of his methodological approach, his qualifications would hardly matter. But to turn an established slogan around, as Gombrich implicitly did in suggesting that at times forms generate functions, would (however true as an observation of reality) emasculate the modernist slogan, whether understood as a commonsense exhortation (“make forms fit functions!”), or as a metaphysical proposition (“find the pre-ordained formal solutions!”).

In his *Sense of Order* (1979) Gombrich stated once more that the formula was known from the field of architectural theory:

I have often suggested that the formula familiar from architectural theory that “form follows function” also offers a guideline to the historian of the other arts (Gombrich 1992, 145).

Judging from his claim that the formula “also offers a guideline to the historian of the other arts”, his word “also” seems to suggest that he thought of the formula as something employed mainly by architectural historians, and related only to the world of historians. In other words, Gombrich still understood the phrase in a descriptive sense, and still had not mentioned its origin in the modernist context, and its purpose as a design imperative. In fact he never did.

In Gombrich's "An Autobiographical Sketch" (1987) the phrase is mentioned briefly again. There Gombrich (1996, 35) writes:

I became very interested in the changing functions of the visual image. Also, one can ask, how do traditions change? What is their influence? You all know the slogan that "form follows function" in architecture. An element of that is true for the image-maker. The poster has a different type of formal treatment from an altar painting.

It is yet again unclear what the words "in architecture" in the above sentence refer to. Is it a reference to the world of architecture proper out there, to a functional theory of architecture held by architectural historians, or perhaps to the modernist movement that made the slogan well-known? We can still most likely assume that the third alternative was improbable.

The relation between Gombrich's own homonymous employment of the formula and the wording of the formula in modernist design theory also remained unclear after what was, in my reckoning, the last time Gombrich explicitly mentioned the dictum. In his "Introduction" to his essay collection *The Uses of Images* (1999) the form follows function formula was brought up in connection with Jacob Burckhardt's program of *Die Kunstgeschichte nach Aufgaben*, to which Gombrich in this introduction now explicitly subscribed. In this he followed his American colleague H. W. Janson, who some seventeen years earlier had attempted to graft the form follows function formula onto Burckhardt's program as well,<sup>10</sup> at much greater length, and with similar kinds of tensions. Gombrich (1999, 7) referred to the formula in the following context:

an element in the situation that must never be left out of account [is] the function an image is expected to serve... we can easily observe how the function assigned to an image will interact with its shape and appearance. This insight, that "form follows function", was first explicitly enunciated in the theory of architecture, when it served as the principle of a particular aesthetic programme.

After these statements Gombrich immediately qualified the formula again:

But a moment's reflection will show that even the forms rejected by that creed served a function—if not a technical one, then a social one. Columns are felt to enhance the dignity of a building, just as the "conspicuous consumption" of decoration reveals the wealth and status of the owner or the institution who commissions it—throne-room demands splendour (*ibid.*).

Here Gombrich reveals for the first time that the form follows function formula was the principle of a *program*, but for some reason he is loath to divulge that the "particular aesthetic program" he mentions was the program of the modernist, functionalist architects and designers. This information was almost timidly buried in an ambivalent book reference in an appended endnote.<sup>11</sup> Did Gombrich avoid plain talk because he wanted to avoid tying himself into knots

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<sup>10</sup> The fortunes of Burckhardt's idea of "*Kunstgeschichte nach Aufgaben*" are discussed and analyzed in Bakoš (2001, 345-352).

<sup>11</sup> This is done only vicariously in his endnote behind the words "*architectural programme*", where Gombrich refers to pages of a book by the British architecture historian J. Mordaunt Crook (1987, 232-271). However, in the given pages Crook discusses only the British architectural development, touching upon neither the American development nor upon the slogan form follows function. The nearest Crook comes to the form follows function formulation and its meaning are these two strongly critical sentences: "The modernist dream of objective form—that is form determined solely by function—was

the same way Janson did in his hardly successful attempt at squaring the prescriptive modernist meaning of the formula with its descriptive art historical use?

But what do Gombrich's qualifications of the form follows function formula aim at here? Does he widen the notion of function in order to make sure that in the art historical context his adopted formula also includes "social functions", such as the previously mentioned expression of dignity, or show of wealth and status? Or—since his "forms rejected by that creed" are all examples of architectural and design elements—are they meant to be critical remarks aimed at that "principle of a particular aesthetic programme", i.e. at the formula as used in the modernist design program?

As already suggested, if such qualifications were to be applied to the modernist notion of function, they would dynamite the very core of the modernist design formula. If the word "function" in the slogan was to be understood as including social functions such as the representation, status and prestige of the owners of the artifact, the scope of such a slogan would not only support the historicist and eclectic type of architecture that modernists wanted dead. It would be a rather pointless slogan too, since all architecture and design, including that of modernism, has, knowingly or unknowingly, incorporated social functions of this kind. But Gombrich was obviously reluctant to see and accept that as long as he qualified the homonymous wording of a formula developed outside his field as radically as he repeatedly did, his qualifications were impinging on the original meaning of the formula. Besides, they were also raising questions about why Gombrich embraced the wording of an established dictum, now qualified out of existence, in the first place.

### **Janson's Adoption of the Formula in 1982**

We find the same rather mysterious need to use the form follows function formula as a summary of an art historical approach used by Gombrich's American colleague of the same generation, H. W. Janson, who was just as Gombrich himself, a bestselling author of a widely used volume of a history of art, published in 1962. Janson mentioned and critically discussed the formula form follows function in that publication, though without connecting it in any way to the homonymous wording of the slogan in functionalist design theory. In the text he characterized the formula as a "technological approach to problems of architectural form" within art history, and pointed out that this approach is marked by both complexity and limitations (*ibid.*, 92, 95). Later in the same publication, he mentions in his discussion of modernist architecture both Louis Sullivan, and the formula form follows function, but without relating it in any way to his previous art historical discussion of the formula.

Janson, however, came back to focus explicitly on the slogan, now understood as both a modernist precept and an art historical approach, in his long essay, entitled *Form Follows Function—or Does it?* (Janson 1982) There he brought in the formula in support of Burckhardt's idea of *Kunstgeschichte nach Aufgaben* (predating Gombrich's own Burckhardtian plea by some seventeen years). The wide scope of Janson's discussion contrasts with Gombrich's own

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always a myth, a mental construct: like Laugier's Primitive Hut. Alas, the modernists ended up by believing their own mythology. They came to believe that Modernism was not another style: it was the final chapter, the Holy Grail" (*ibid.*, 244). Further on in the text he points out, not without sarcasm, the formalist character of modernist architecture, and speaks of "the Puritan Fundamentalism of Modernist theology" (*ibid.*, 264), and, in discussing the Post-Modern context: "*Increasingly, the fiction of function has been forgotten*" (*ibid.*, 269) All of this could be taken as fitting comments on the form follows function slogan, and its hidden metaphysical makeup.



exceedingly brief remarks on the formula, which were in some ways, for all their brevity, more refined than Janson's discussion. Janson mentions unequivocally that form follows function was the credo of the "Functionalist school of modern architecture", and gave an extensive historical background to functionalist theory. He also provided a short history of the art historical discipline, and submitted that "art history and functionalist design theory were born at the same time, each in response to the collapse of the Renaissance tradition...". The purpose of his long exposition was to propose "the axiom that in the history of art the *Aufgabe*, the function, determines the form", and to show its methodological feasibility (*ibid.*, 9, 24).

Janson's extensive discussion of the slogan, like Gombrich's own brief remarks on the subject, saw the slogan as a commonsense, functional argument as well, and failed completely to mention the metaphysical dimension of the "credo", which alone made it after all, at least logically, a meaningful proposition. And just as in Gombrich's case, it remained unclear what in fact the advantage was of summarizing Burckhardt's challenge in terms of a formula, which had been semantically pre-empted by the prior existence of modernist design theory.

### Rejecting the Slogan in its Descriptive Sense

While Gombrich and Janson contributed to keeping the formula form follows function respectable through promoting it as the Burckhardtian approach to art history outside the bounds of art history discipline, in the world of architecture and design a commonsense revolt against the formula was going on, persuasively showing its unfeasibility, in both its descriptive and prescriptive sense.

It seems that the history of the descriptive, commonsense understanding (or rather misunderstanding) of Sullivan's formula that characterizes both Gombrich and Janson had already started, interestingly enough, with the American architect Dankmar Adler in 1896 the very year the formula was coined (cf. Adler 1972, 243-250). Adler, who was until 1895 Sullivan's senior partner, discussed and criticized the slogan only weeks after Sullivan's above mentioned article, promoting the formula, was published. Adler, however, interpreted the formula in strictly commonsense terms, ignoring completely its metaphysical underpinning, just as all subsequent descriptive interpretations of the slogan would do. He criticized the formula both as design imperative, rejecting it as an example of what would much later be labeled "vulgar functionalism",<sup>12</sup> and as a description of contemporary architectural practice. To remedy the formula, Adler proposed to expand it to include what he called "*environment*", arguing that factors such as new materials (plate glass, steel construction) and social context also determine form.<sup>13</sup>

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<sup>12</sup> "From this one might infer that it is only necessary to divide into a few classes the functions to be served by architectural structures and to determine the form best adapted to each, and thus develop an infallibly correct system of architectural design from which none may deviate without incurring the reproach of ignorance and lack of culture. —We would then have an architecture somewhat more scientific and vastly more practical, but as trite and as devoid of the interest imparted by the creative impulse, as is the architecture founded upon the principle, Form follows historic precedent, which stamps as barbaric every structure for which the architect has failed to provide an academically and historically correct mask and costume, and which treats as heresy an attempt to do, not as the Romans did in the year 1, but to do as one thinks the Romans might have done in the year 1896" (Adler 1972, 243-244).

<sup>13</sup> "Therefore, before accepting Mr. Sullivan's statement of the underlying law upon which all good architectural design and all true architectural style is founded, it may be well to amend it, and say: 'function and environment determine form', using the words environment and form in their broadest sense" (*ibid.*, 244).

Historians of technology, architecture and design also tended, in Gombrich's and Janson's own time, to read the formula as a general descriptive statement. But in contrast to Gombrich and Janson, they were rejecting it as a mistaken description of what was going on in the design process. For example, the American historian of technology, Eugene Ferguson (1978),<sup>14</sup> trashed the formula as a "simpleminded phrase" that completely misrepresented the real design process. He questioned the meaning of the term "function" which he argued was conceived of as something given, firmly rejected the idea that there is only one proper solution to a problem, and also pointed out that form often prompts a use. (Gombrich made a similar point at about the same time, but without connecting the observation to the modernist theory.) Also design historian Adrian Forty (1986), taking the formula as a descriptive claim about how human artifacts come about, rejected it flatly as a historical explanation since in his eyes it implied that "all objects with the same use should look the same".<sup>15</sup> Other important writers, such as Susan Lambert (1993) focused on examples of modernist architecture and design proper. In this case the attempt to understand the modernist artifacts as results of forms following functions appeared more legitimate, since the artifacts were presented as results of the application of the formula by the modernists themselves. But Lambert showed persuasively that not even the architecture and design of modernists themselves could be understood as a case of forms following functions. She argued that the modernist formal solutions, presented by their authors as some sort of objective, impersonal, historically necessary results of functional analyses, were carefully designed with an eye on creating definite stylistic impacts.

All these critics came with pointed and barbed criticism. But because all of them, just as Adler before, failed to take into account the fact that the slogan was ultimately a metaphysical, and not a commonsensical proposition, they kept barking up the wrong tree. Since the formula was a summary of a metaphysical belief applied to design, and made sense only in terms of that belief, it should have been attacked and rejected as an unfeasible metaphysical proposition, and not as a commonsense description of the origin of artifacts. In other words, this kind of criticism kept missing the core of the formula.

### **Rejecting the Slogan in its Prescriptive Sense**

That was, however, not the case with practicing designers and design theorists. Some of them attacked the metaphysical core of the slogan directly, while others endeavored to show that

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<sup>14</sup> "Let me eliminate from our analysis a red herring that frequently swims into view. I refer to the notion that form follows function, which suggests that a person who produces an elegant invention has somehow found the perfect form for the given function. All he has to do, we are told, is to study function, and out of it will emerge a form. You may remember that it was Horatio Greenough... who first tied form to function. That was a full generation before Louis Sullivan gave currency to what has become the simpleminded phrase "form follows function" (Ferguson 1978, 455).

<sup>15</sup> "To describe design as an activity that invariably disguises or changes the shape of what we take to be reality [as Forty attempts to do in his text] runs contrary to many present-day platitudes about design, in particular the belief that the appearance of a product should be a direct expression of the purpose for which it is used, a view embodied in the aphorism "Form Follows Function". The logic of this argument is that all objects with the same use should look the same, but this is patently not the case, as a glance at, say, the history of ceramics will show: cups have been produced in an endless variety of designs. If the only purpose of a cup was to drink from, there might well be only one design, but cups do have other uses: as articles of commerce, they serve to create wealth and to satisfy consumers' craving to express their sense of individuality, and it is from the conjunction of such purposes that the variety of designs results" (Forty 1986, 12).

the formula was misleading and useless as a design precept. Such unequivocally critical voices were nevertheless rather rare. After the formula became more generally known in the USA from the mid-1930s on and in Europe following the Second World War, the absolute majority of modernist architects and designers and their sympathizers tended to treat the slogan respectfully, almost with awe, as the gist of the modernist effort. Its seeming obviousness and simultaneous opaqueness was considered a sign of great profundity.

But not all practitioners were awed. To my knowledge the first unequivocal rejection of the slogan came from two American industrial designers, Barnes and Reinecke, who in an article of 1938 that defended design as a part of a down-to-earth commercial activity, pointedly rejected the slogan as a sort of Platonic hang-up.<sup>16</sup> Architect Matthew Nowicki stated in 1951<sup>17</sup> that in modern architecture form followed form rather than function, and maintained that what the contemporary designer should keep in mind is that there is no single way of solving a problem, thus implicitly throwing the slogan out. David Pye, a British designer and one of the most insightful design thinkers in the English-speaking world, has attacked the form follows function formula since the early 1960s as a straightforward nonsense. He stamped the notion of function a highly misleading term for discussion of the design process (“*function is a fantasy*”), mentioned its disqualifying resemblance (at least in Sullivan) to a Platonic idea,<sup>18</sup> stated flatly that “the form of designed things is decided by choice or else by chance; but it is never actually entailed by anything whatever”, and drew attention to the fact that while we keep talking of function and functioning, our artifacts never ever really work as we expect them to.<sup>19</sup> The US architecture and design thinker Christopher Alexander represented another step towards a commonsense, non-metaphysical design theory. He pointed out, also in 1964, among

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<sup>16</sup> “Such criteria as ‘form follows function’ are unsound because their first premise is unsound. They make the error of assuming that there is one, and only one right way of doing a thing. This is a hangover from the Platonic postulate of an eternal and immutable ideal form inhabiting a misty other world” (Barnes and Reinecke 1938, 148).

<sup>17</sup> “We have to realize that in the overwhelming majority of modern design form follows form and not function... Where is the future of modern design? It seems to me that it depends on the constant effort of approaching every problem with the consciousness that there is no single way of solving it” (Nowicki [1951] 1972, 411, 418).

<sup>18</sup> “Louis H. Sullivan, who expatiated of form following function in a most entrancing manner (“...the form, wave, looks like the function, wave ...” etc., etc.) quite evidently meant by function something approximating to the Platonic idea: the eternally existing pattern of which individual things in any class are but imperfect copies. But apparently he did not consider that the copies of it were necessarily imperfect. He considered that the Idea (which he chose to call by the name function) was continually striving to find perfect expression; the Idea being something willed by God, and active on its own account; active moreover through the agency of human invention (in its widest and least restricted sense) so that the form axe might be a perfect expression of the Idea axe for all that it was not a natural form, but man-made” (Pye 1964, 95).

<sup>19</sup> “The concept of function in design, and even the doctrine of functionalism, might be worth a little attention if things ever worked. It is, however, obvious that they do not... Nothing we design or make ever really works. We can always say what it ought to do but that it never does. The aircraft falls out of the sky or rams the earth full tilt and kills the people. It has to be tended like a new born babe. It drinks like a fish. Its life is measured in hours. Our dinner table ought to be variable in size and height, removable altogether, impervious to scratches, self-cleaning, and have no legs... Never do we achieve a satisfactory performance... Everything we design and make is an improvisation, a lash-up, something inept and provisional” (Pye as quoted in Petroski 1992, 26-27).

other things, that what we refer to as design problems are really failures of earlier design solutions to perform satisfactorily (Alexander as quoted in Petroski 1992, 28), an insight that suggested that in reality designers always start from past forms embodying earlier functionally wanting solutions.<sup>20</sup> The US technology historian and design theorist Henry Petroski, following both Pye and Alexander, argued in 1992 that, contrary to what the formula claimed, the form of any existing product is invariably a result of corrections of the preceding product's form (cf. also Michl 2002, 7-23): the form is corrected because it is perceived as failing to perform as well as one would have wished. The British architect and design theorist Brian Lawson claimed in 2004 in his book discussing what designers know, for example (without evoking the slogan explicitly), that design problems are seldom ever expressed in a thorough and comprehensive way, that clients are unable to clearly articulate the whole problem even at the end of the process, that design problems are usually solved without ever having been completely stated, that each designer or design team is likely to end up solving a different range of problems given the same starting point, and that the experienced designer is interacting with the problem situation by recognizing possible, i.e. precedent solutions rather than by recognizing the problem directly (*ibid.*,13, 115).

What all these critics pointed out was based on commonsense observations. Their direct as well as indirect conclusion was that the form follows function formula was hardly more than a flight of fancy (Brolin 1985).

## A Summary and Conclusion

Both Gombrich and Janson espoused and promoted Burckhardt's exhortation to see the history of art through the notion of tasks. This was meant to be an antidote against the kinds of art history that saw period styles primarily as expressions of specific spirits of particular epochs, and that tended to conceive of art history in predominantly formalist terms. In order to summarize this Burckhardtian position, they both opted for the wording of the form follows function formula, known from modernist design theory. Gombrich's own connection of his adopted formula to that of modernism in design had remained ambiguous and obscure, in contrast to Janson, who made the connection entirely explicit.

This adoption of the formula was, however, a highly paradoxical move, as the homonymous modernist formula hardly had anything to do with what Gombrich and Janson wanted it to stand for. Not only was it a design imperative, rather than the declarative, descriptive statement it was taken to be. By its nature, it was also a metaphysical, anti-commonsense proposition, apparently based on a secularized version of inherited theological ideas and ways of thinking.<sup>21</sup> Its metaphysical makeup was in many ways the very embodiment of all that Gombrich repeatedly and fiercely criticized. Modernist architects and designers who subscribed to the formula, were all devotees of what Gombrich condemned as "periodism", the Hegelian idea that "we have a

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<sup>20</sup> "We are never capable of stating a design problem except in terms of the errors we have observed in the past solutions to past problems. Even if we try to design something for an entirely new purpose that has never been conceived before, the best we can do in stating the problem is to anticipate how it might possibly go wrong by scanning mentally all the ways in which other things have gone wrong in the past" (Alexander as quoted in Petroski 1994, 3).

<sup>21</sup> M. H. Abrams coined the paradoxical term "Natural Supernaturalism" for that way of thinking (cf. Abrams, 1971).

moral duty to go with the times.”<sup>22</sup> The dictum was informed by “faith in an underlying plot ... that inevitably carries mankind forward to a higher mode of existence”, a belief that Gombrich’s philosophical mentor Karl Popper branded as “historicism” (Gombrich 1999, 249). The formula could be used to illustrate Popper’s suggestion that “historicists were trying to compensate themselves for the loss of an unchanging world by clinging to the faith that change can be foreseen because it is ruled by an unchanging law” (Popper 1969[1957], 161). It promoted aesthetic and social midwifery as the only perfectly reasonable activity open to architects and designers.<sup>23</sup> It represented the view that saw “the styles of the past merely as an expression of the age”, a view that “torment[ed] the living artist with the empty demand that he should go and do likewise and express the essence and spirit of his time ...”, as Gombrich put it in another context in 1957.<sup>24</sup>

Even though the challenges and problems of three-dimensional design pertaining to the world of architecture were never in the center of Gombrich’s interest, the modernist slogan would have probably not stayed outside the field of his critical interest, had it not been for his espousing the form follows function formula for his own particular methodological purposes. It may have been by dint of his early understanding and use of the formula in a commonsense, descriptive fashion, and his later adoption of it as a seemingly handy summary of his Burckhardtian methodological position, that Gombrich was barred from bringing his awesome anti-metaphysical firepower to bear on the metaphysical foundations of 20<sup>th</sup> century design theory. Gombrich’s early adoption of the formula as a précis of his own methodological points may therefore provide a possible explanation for why the metaphysical dimension of the modernist theory of design remained below the radar of his penetrating intellect.

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<sup>22</sup> Gombrich (1995) argued that “on the contrary, we may rather have a moral duty to resist the pressures of collectivism that are menacing our civilization”.

<sup>23</sup> This is a paraphrase of Popper’s statement from *The Poverty of Historicism*; “Only such plans as fit in with the main current of history can be effective. We can now see exactly the kind of activity admitted by historicists to be reasonable. Only such activities are reasonable as fit in with, and help along, the impending changes. Social midwifery is the only perfectly reasonable activity open to us, the only activity that can be based upon scientific foresight” ([1957], 1969, 49).

<sup>24</sup> The full quotation is as follows: “The art historian who sees the styles of the past merely as an expression of the age, the race or the class situation, will torment the living artist with the empty demand that he should go and do likewise and express the essence and spirit of his time, race, class or, worst of all, of the self” (Gombrich 1978, 118-119).

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