

World Without End

Review Essay: David Summers, *Real Spaces: World Art History and the Rise of Western Modernism* (Phaidon, 2003).

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WORKING DRAFT – NOT FOR QUOTATION OR PUBLICATON

David Summers' treatise *Real Spaces* is one of the most important books to have appeared in art history since 1960, the year in which E. H. Gombrich published his 1956 Mellon Lectures under the title *Art and Illusion*. Like Gombrich's now-classic work and a handful of books published since then, including George Kubler's *Shape of Time* and Michael Baxandall's *Painting and Experience in Fifteenth-Century Italy*, Summers' book should be read by all art historians in any subfield of the discipline. In many areas of art history it will be a *sine qua non* for all further serious discussion of fundamental problems. It likely will – and should – appear on the reading list of any academic course (whether beginning or advanced) purporting to introduce the methods, theories, and history of art history. And it likely will – and should – be studied by anthropologists, archaeologists, architects, and general readers concerned with the configured organization of human cultural worlds in the past and in the present.

More than 650 closely printed pages, *Real Spaces* asks its reader to make an immense commitment of concentrated attention. Despite Summers' luminous exegesis, compelling description, and lucid argumentation, his discussion is challenging: seemingly straightforward propositions reveal their subtlety and power – and their difficulties – only as they have successively been put to use in a complex, sophisticated argument that accumulates over hundreds of pages and requires constant foreshadowing and backtracking to remain in a clear overall

view. In presenting this text, Phaidon, the publisher, has served Summers well. Considering the heft of the book, it is well laid out and easy to handle. The reproductions of nearly 350 well-chosen illustrations, all black-and-white, are good – though occasionally some are too small to see details addressed by Summers. A helpful glossary and full analytic index aid the reader in tracking a welter of definitions, propositions, claims, and comparisons. Diagrams bolster a number of theoretical discussions; they are marvels of clarity and economy.

To be sure, Summers has taken a calculated risk in writing a very long book. Because it has an essentially argumentative – a propositional or even a lemmatic – structure, it could have been considerably compacted by eliminating entire sections of intellectual-historical exegesis and art-historical exemplification, masterful as these set pieces turn out to be. Buried in *Real Spaces* there is a short book like Kubler's *Shape of Time* – one of Summers' professed models – or Baxandall's *Painting and Experience*. (Even *Art and Illusion* is only 400 pages long.) In view of the length and density of the book Summers has elected to write, there is a good chance that it will not be so much read as skimmed or selected or excerpted. And this would be a shame. Many individual parts of the book will probably strike readers who might select to read them – and only them – as covering familiar ground. For example, neither the substantive claims nor the evidentiary basis of Chapters 2 and 3, on “places” and “centers,” or of Chapter 7, on Western modernism, vary in great measure from perspectives on the anthropology of art in pre-industrial societies and on the archaeology of art in early civilizations (in Chapters 2 and 3) or on the history of a modernist avant-garde in the arts of Western nation-states since the late eighteenth century (in Chapter 7) that have long been familiar to students of those topics. Indeed, Summers depends heavily on established (if sometimes controversial) scholarship concerning them – for example, in Chapters 2 and 3, on Vincent Scully's emphasis on symbolic architectonic alignments between buildings and natural formations in the landscape,¹ and in Chapter 7, on Fritz Novotny's

¹ Vincent Scully, *The Earth, the Temple, and the Gods: Greek Sacred Architecture* [1962], rev. ed. (New Haven, 1969). Subsequent scholarship has consolidated some of Scully's perspectives although

interpretation of the post-perspectival organization of Cézanne's pictorial compositions. Generally speaking Summers cannot undertake a comprehensive re-evaluation of the archaeological evidence that has constituted (or reconstituted) the sites and artifacts he describes. Sometimes one suspects a too-convenient fit between Summers' base of preferred art-historical scholarship and his own interpretations of the objects of world art history. Different archaeologies might have supported a different overall view; in due course I will mention some of them. But it is understandable that Summers deploys primary materials – at least in their secondary scholarly description – that dovetail with his own approach even as these material have enabled him to consolidate it. There could have been no other way to proceed.

“World Art History” and “The Rise of Western Modernism”

What distinguishes Summers' presentation is his systematic (re)description and (re)contextualization of all these raw materials – seemingly so disparate – in the terms of a framework devised to tell the overarching story of what Summers takes to be the most fateful history in world art. *Real Spaces* describes the emergence of “virtual” (and ultimately unbounded) metric spaces from “real” (and usually centered) architectonic places of artifact making and especially of image configuration. In particular, Summers tracks the “notional” development of virtual-image spatiality toward what he calls its “metaoptical” reification – the modern Western production of an indefinitely or infinitely extended “three-dimensional co-ordinate space” that resembles (if it is not quite the same as) both Cartesian space and Newtonian absolute space. In “metaopticality” Summers would identify the emergence – it has occurred in the later modern world – of an immanent disjunction (if not an absolute contradiction) between real-spatial

many classical archaeologists have always doubted them (see especially Homer A. Thompson, *The Art Bulletin* 45 [1963], 277-80, and Michael Jameson, *Classical Philology* 60 [1965], 210-14). For Summers' purposes, we might say that Scully's results, though highly suggestive, would be flawed because the supposed axial alignments – straight or diagonal as the case might be – have

cultures and virtual-spatial cultures *despite* their historical continuity. As Alois Riegl showed more than a century ago, a perceptual and noetic disjunction between an artifact that can be used in a place and a picture that projects a world can transpire *within* a single cultural tradition (Riegl's example, of course, was the continuous tradition of Roman *Kunstindustrie*). In my opinion, the best part of Summers' contribution would describe replication in *any* cultural tradition – including the most ancient or the most isolated – as a tension between relatively real-spatial and relatively virtual-spatial configurations, whether the tradition produces what Summers calls “real metaphors” (artifacts that substitutively present things to observers) or “images” (artifacts that depictively represent them) or both. (I will pursue this point in more detail below.) But the tension between real and virtual spaces inevitably must characterize all of world art history as a whole – and the relations between cultural traditions all around the world – since the rise of Western modernism and the effective globalization of its reification of virtual-image spatiality in so-called metaopticality.

According to Summers (Chapter 7, esp. 7.13), the specifically avant-garde or modernist later-modern art of the West has already expressed this immanent disjunction. The inventions of post-Impressionist painting and Cubist painting and collage, he believes, presented a critique of the emergent modern metaopticality that had by then been accepted in the West as natural. At the same time, however, the avant-garde art of Western modernity could not avoid in part perpetuating the metaoptical reification that sustained its own consolidation in a critical rediscovery of – even a reversion to – pre- or nonmetaoptical kinds of virtual and real spatial configuration. In Summers' presentation of this matter it is unclear whether specifically avant-garde modernist art in “the West” (as a now-globalized cultural tradition) contributes today to the supersession of non-Western real-spatial cultural configurations or helps to accommodate them – or both or neither. Summers does not address that question head-on. But as a liberal moralist he hopes for accommodation. And it

purely optical realization and little evident social-ritual content. By contrast, Summers generally understands “real spaces” as spaces of social use and activity – not just zones or lines of sight.

seems that he provisionally expects it from certain contemporary arts – especially those arts that remind him of pre-modern and non-Western real-spatial configuration (as in the practices of certain “earth” or “environment” artists in the U.S. [pp. 651-52]) and those arts that seem to embody a distinctively contemporary-global rapprochement between traditional real-spatial and modernist virtual-spatial practices (as in the productions of contemporary indigenous artists in Australia and elsewhere [pp. 661-62]). Still, by the terms of Summers’ own widest argument it would seem to be difficult for contemporary “Western” artists – whether working in the nation-states of the West or elsewhere in the world – entirely to reconstitute themselves outside the modern metaopticality in relation to which their own configurations have purportedly been generated critically. Aspects of the most recent art history of Western modernism in its globalized formation – such as computer-generated virtualizations or even “Internet Art” – probably bespeak a continued reification and accelerating dissemination of metaoptical virtuality.²

All chapters of *Real Spaces* contribute to this large-scale history. The heart of Summers’ account, however, can be found in parts of his Introduction (sections 3-5, 7) and Chapter 1 (especially 1.1-1.3, 1.8, and 1.14-1.15), at the end of Chapter 4 (4.29-4.35), in Chapters 5 and 6, and at the beginning of Chapter 7 (7.2-7.4); these sections deal with “real space,” “facture,” “surficiality,” “planarity,” “virtuality,” and “metaopticality” respectively. The most original sections of the text, they might be said to comprise the book within the book mentioned above. It is only in their light that we can fully appreciate Summers’ more familiar historical and theoretical reflections – his comments on formalism, representationalism, culture, and aesthetics (Intro., sects. 2, 8-10), on materials, styles, and value (Chapter 1.6-1.12), on places and centers (Chapters 2 and 3), on “real metaphors” or substitutes and on images as effigies and icons (Chapter 4.1-

² This last topic is not explicitly addressed by Summers although it can be seen as one of the implicit *teloi* of his book. For thoughtful reflections on the critical potential of some projects of Internet Art, see Julian Stallabrass, “The Aesthetics of Net.Art,” *Qui parle* 14:1 (2003), 49-72.

4.28), and on the vicissitudes of Western avant-garde arts as a ramified critique of modern virtuality and its metaoptical reification (Chapter 7).

I will return to certain crucial turns and twists in Summers' sweeping account. But it should be said straight off that it can only be fully assessed as a unified transhistorical and transcultural history in human making that connects the stone tools used by hominids in the Olduvai Gorge nearly two and a half million years ago to works of twentieth-century Western ultra-modernist art like the Rothko Chapel in Houston. To some extent Summers disavows any interest in a "totalizing" history of human making. Like other anthropologically minded historians, he insists that there can be no Olympian ranking of artifacts produced in different and discrete human cultures – no privileging of hominid Oldowan culture (on the one hand) or of mid-twentieth-century North American culture (on the other hand). Each and every human culture makes what it needs to use – deriving materials, styles, and techniques from what lies to hand for it in its practices and traditions. Nevertheless, in the end *Real Spaces* addresses itself to a putative world-historical distinction between "world art history" (on the one hand) and "the rise of Western modernism" (on the other hand) even though (as Summers shows) Western modernism devolved from configurative possibilities widely dispersed in other cultural traditions as well. In the end Summers' argument – that is, the argument relayed in the *overall* structure of his book as distinct from its discussions of innumerable subtopics – stands or falls by the epochal history implied in the seemingly innocuous copula of his subtitle. And the full force of this copula can only be appreciated after reading the whole book.

Real Spaces has a decidedly Kantian aspect. I do not mean by this that it applies the doctrine of subjective universality, that is, Kant's aesthetics in the *Critique of the Power of Judgment* – though it does. I mean that it undertakes to understand artifacts and images as productions of the transcendental imagination – that is, as noetic (or what Summers calls notional) developments of fundamental schematisms of spatiality. In *Real Spaces*, these schematisms go by the names of planarity, virtuality, and metaopticality. (There may be others, but I will deal with these three.) All three are relative to – and finally dependent

on — “real space.” Summers’ foundational or primordial category, real space is the spatial situatedness — the locale or place — of environments, artifacts, and images as they have been made and as they can be observed and used by human beings in particular historical and sociocultural contexts of meaning, status, and value. Real space, then, is not space as it might subsist outside human phenomenal experience and cultural tradition — space as such or in itself. Space as such or in itself, “absolute space,” has been imagined and virtualized in modern Western scientific culture; as already noted, Summers considers absolute space to be a metaoptical reification of virtual spatialities that allowed an imaginative construction of “three-dimensional co-ordinate space.” Like other human spatialities, absolute space is a cultural — or what Summers calls the second-natural — development of real space (at the same time as it creates its own new spatiality) rather than a natural platform, as Gombrich might have thought, for the human animal’s perceptual recognition of real space as it really subsists.

Along with real time — and as Kant tried to prove in his critique of a supposedly pure reason — real space might be called human *actuality*: it is the moment and the setting of human thinking, human doing, and human making — and especially of human social and moral purposiveness — in culture. Although I will not pursue the point, there seems to be a congruity between Summers’ “real space” and Martin Heidegger’s “original time” — the primordial Being of human actuality that subsists, Heidegger argued, as the *fons et origo* of the transcendental imagination and its deductions of world in Kant’s sense. Whatever else *Real Spaces* might accomplish, it disputes the self-serving Heideggerean presumption that in analyzing the history of *Dasein* — a human being’s concrete existence in cultural place and time — the schematisms of temporality must be privileged over the schematisms of spatialization. In a sense *Real Spaces* might be read as a long-overdue Kantian riposte to Heideggerean pretensions in the history and criticism of visual and spatial arts — including the “temporal” or “time-based” arts of kinetic objects, film, video, and Internet Art. Still, as we will see, his approach to the originary actuality of “real space” leaves Summers open — in his turn — to a Heideggerean critique, that is, to the objection

that his emphasis on spatiality neglects human cultural temporalizings. I will come back to this matter at the very end of these remarks.

What Summers calls notional developments of real space – planarity, virtuality, and metaopticality – are not absolutely given to the mind. They are cultural productions. But Summers’ argument tends to suggest that they are *immanent* in all human making. And they are historically *emergent* – they are developments of real-spatial worlds as these projections elaborate immanent spatial schematisms. This emergence should not be seen as a single necessary world-historical sequence – a sequence imposing a Hegelian pattern on endlessly various (and variously schematized) human real-spatial configurations. Summers writes in detail and depth about many ancient and modern cultural traditions all around the world that seem to present noncomparable (perhaps even incommensurable) schematisms of real-spatial possibility. Nonetheless, the differential *historical* emergence of real-spatial schematisms must not only take us to a vast array of human cultures. It also requires us to identify a “world art history” that displays a particular historically emergent sequence in the immanence of real-spatial schematisms. This sequence – it supposedly moves *from planarity to virtuality to metaopticality* – depends on the mutually constitutive noetic determinations or interdeductibility of the real-spatial schematisms. But it also embodies a particular global social history of supersession – namely, the “rise of Western modernism.” In this sense there is a Hegelian flavor to Summers’ Kantian analysis. Real-spatial emergences – the production of planarity, virtuality, and metaopticality in human cultures of making artifacts and images – involve transcendence, the abstraction of immanent possibilities to notional forms. But the globalization of Western modernism finally involves a negation. Fully generalized, the “three-dimensional co-ordinate space” constructed in modernism became the only historical transcendence of all real human spaces: metaoptical space overcame all other forms of real spatiality by insistently producing them to their notional limits (immanent in the earliest forms and modes of hominid and human making) and categorically resituating them there. In this negation, *real spaces*

simply became *real space*. And supposedly the real space of metaoptical transcendence and the real spaces of its grounds are world-historically disjunct.

Two Principles of Epochal Art History

Apart from Summers' occasional debts to Gombrich's specialist art-historical scholarship on Italian Renaissance picture making, there are striking similarities between *Real Spaces* and *Art and Illusion* despite their different – at points almost diametrically opposed – agendas. It will be helpful to remark them before proceeding further. Both books use a basic polarity to organize an account of a transcultural noetic development that spans the entire known history of art from the paleolithic period to contemporary art and including art produced on four continents. Summers' account preserves – even as it revises and reorients – the polarity popularized by Gombrich (though Gombrich did not originate it).

In *Art and Illusion*, Gombrich contrasted “conceptual images” (most clearly embodied, for him, in the configurative practices of pharaonic Egyptian picture makers) and naturalistic depictions (embodied in the paintings of European artists like Giotto, Jan Van Eyck, and John Constable). According to Gombrich, naturalistic pictures devolved from conceptual images historically but departed from them noetically – a development substantially contributing to, if not inaugurating, the distinctive thought-world of Western modernity. Summers has reservations about the idea of “conceptual images” (pp. 19-21). Nevertheless he accepts Gombrich's basic distinction – even as he explicates it in a counter-Gombrichean way. Gombrich hoped to identify the forward progress of a *natural* human propensity for “making and matching” the appearance of images to the world as human beings encounter and explore it – a continuous progress in what he called the “falsification of hypotheses.” By contrast, Summers identifies a *cultural* development in what he calls the conditions of presentation of images on surfaces in real spaces – a development of one of these conditions, planarity, to the full notional generalization and reification of its emergent virtualities. For Summers, as for Gombrich, the conditions of planarity are best illustrated for us

by ancient Egyptian configuration; Summers devotes considerable attention to canonical Egyptian pictures in stating their distinction from – and development toward – virtuality. And the conditions of virtuality are best illustrated for Summers (as they were for Gombrich) by Greco-Roman paintings and reliefs, by early modern Western paintings and reliefs, and especially by the one-point perspective pictorial demonstrations of Filippo Brunelleschi and his immediate peers and successors in the fifteenth century in Italy and their innumerable replications and elaborations in later Western traditions of pictorial realism.

We might say, then, that Summer's *Real Spaces* is a culturalist riposte to Gombrich's naturalism in *Art and Illusion*. Relative to Gombrich's history, Summers' is more strictly and specifically *art*-historical. Gombrich imported an independent noetic principle – a principle of animal perception and human cognition – into his art history; he took it over from Karl Popper's philosophy of science (or, better, Popper's *Logik der Forschung*), from contemporary ethology, and from then-current perceptual psychology. He devoted many pages in *Art and Illusion* and many complementary publications to an elaboration of his quasi-falsificationist and proto-cognitive psychobiological premisses. At the time they were conspicuously *external* to the history of art – though Popper had applied them to the protocols of modern scientific experimentation, Niko Tinbergen to the behavior of ducks in a marsh, and Jerome Bruner to the decision making of undergraduates in standardized tests. It was this very externality – the extra-artistic generality of Gombrich's psychology – that conferred plausibility on the art history Gombrich had rewritten in proto-cognitive psychobiological terms.

By contrast, Summers investigates possibilities *internal* to the spatial orders and visual relations of artifactual configuration – especially to imagistic orders and relations. Compared to Gombrich, he does not fully set out his principle of the replication of these orders by different historical makers – namely, a principle of immanent “abstraction” toward “notionality.” But it is striking that his principle is itself internal to the history of reflection on spatial and imagistic phenomena: it adapts Aristotle's doctrine of progressive abstraction (*aphairesis*) from the real size of objects. Thus Summers would seem to provide a speculative

historical anthropology of emergent spaces and images in the configuration of places and artifacts that *depends* on a principle of image spatialities at the same time as it *explains* them. Does this involve him in a great tautology? Or conversely does it enable his history of human space- and image-making to be properly coordinated with the supposed noetic matrix of that very making? At every turn of the long and layered argument in Summers' book we find ourselves confronted with this basic question.

It is worth noticing another contiguity between Gombrich's *Art and Illusion* and Summers' *Real Spaces*. Both books can be read as the reaction – it is always sincere and it is often impassioned – of a Western liberalism confronted with Western technobureaucratic modernism in its increasing and in some accounts its inevitable generalization and globalization. In Gombrich's presentation, liberal sympathy and Western modernism reinforce one another – but only to the extent that modernity produced scientific naturalism. Gombrich embraced the putative objectivity of naturalistic picture making not only because it replicates the cognitive posture of modern science and medicine. Naturalism purportedly also staves off the irrationalism – even the tyranny – of a subjectivism that Gombrich identified at its core with a Hegelian-fascist egoism. At its best, a highly naturalistic Art (according to Gombrich) is not so much the *making* as the *unmaking* of Illusion – of false awarenesses predicated on and relaying unchallenged beliefs or what Gombrich called stereotypes. For Gombrich, then, the supposed decline of naturalistic art in the early twentieth century was a genuine cause for liberal concern – indeed, for outright anxiety and fear. To be sure, avant-garde modernism abandoned naturalism in the self-criticism of its own modernity. To that extent it should have attracted Gombrich's approval. The extremity of the criticism, however, required him to doubt its objectivity.

In *Real Spaces*, Summers' liberal sympathy and his history of Western modernism confront and to some extent oppose one another – despite the historical twinning of modernism and liberalism, and only to the extent that modernity produced metaopticality. In Summers' art history, the dissemination of modern Western naturalistic painting in its most extended condition of

virtuality – Gombrich’s cultural and cognitive lodestar – turns out to be the object of liberal anxiety: in its metaoptical reification (secured by the modern science that Gombrich admired), this virtuality supposedly threatens to occlude or overwhelm all other cultural configurations of spatial and visual experience, especially those achieved in non-Western societies. As in Gombrich’s account, then, in Summers’ history it is the emergent *extremism* of a development – said to be immanent in Western cultural modernism from its very beginning – that perturbs the liberal art historian’s sense of moderation, tolerance, and equality. The full notionalty of virtuality plays a role in Summers’ history equivalent to complete critical falsification in Gombrich’s history: in the noetic completion it is also the destruction of its cultural grounds.

The *difference* between Gombrich and Summers is most marked in their evaluations of experimental or avant-garde later-modern arts in the West. For Gombrich, as I noted, these arts display the partial dissolution of the real objectivity attained in modern naturalisms – their ability to grasp what Gombrich would have called real space or the world as it really is. For Summers, these arts present the possibility of a real critique of – an investigation of alternatives to – a metaopticality reified in modern virtualities. Where Gombrich worried, as a liberal, about avant-garde art, as a liberal Summers would hope to praise it. Either way, however, both Gombrich and Summers would have to recognize that modern Western naturalisms and virtualities will displace other (nonnaturalistic and nonvirtual) cultural practices of configuration *according to the very principle that both historians themselves accept as the immanent matrix of all human configuration in order to describe the very possibility of naturalism or virtuality in world art history* – for Gombrich, making and matching, and for Summers, abstraction toward notionalty. In the end, then, both art historians fall back on liberal platitudes – the plea that every cultural viewpoint ought to be acknowledged and respected (presumably so long as it does not itself violate a liberal morality of pluralism). But this moralism does not fully square with the trajectory of the speculative historical anthropology that both historians would have us endorse.

If there is (or if there can be) no *absolutely falsifying* making and matching, or if there is no *indefinitely totalizing* abstraction to notional, then the problem of accommodating “the West” and “the rest” might involve considerations quite different from the ones Gombrich and Summers bring to bear on it. In both Gombrich’s and Summers’ histories, the problem has been entirely framed by the very principle used to identify the supposed cultural history of an epochal development and categorical distinction between Western modernism and all other cultural practices of configuration. Gombrich’s history of making and matching carried toward the objectivity of scientific naturalism should have been controlled – as he acknowledged at points – by a Summers-like explication of cultural commitments to functions of space and image that always involve “conceptual” configuration in Gombrich’s own terms. By the same token, Summers’ history of abstraction to notional carried to the reification of metaopticality must, it seems to me, be controlled – as he himself admits – by a Gombrichean awareness of making that always involves what Summers would have to take to be decidedly counternotional considerations – corporeal, optical, and pictorial. Gombrich’s most successful match must still be made. And as Summers himself would be the first to insist, the most extreme virtuality must have real-spatial grounds. For this reason, one side of Summers’ argument – his jeremiad about the rise of Western modernism as the dissolution of real spatiality – might be countermanded by the other side of his argument – his insistence that real spatiality must situate all configuration. In the end, it seems to me, world art history manifests an irreducible tension – and an historical fluctuation as opposed to the epochal transition – between several relative and counterposed conditions of immanent virtuality in artifact and image making. Summers has done an immense service in identifying and thoroughly explicating these conditions – what he calls planarity, virtuality, and metaopticality. But I do not believe that a world-historical teleology should be imposed on this set. The noetic interdeductibility of planarity, virtuality, and metaopticality means, I think, that each remains immanent – and part-emergent – in the others.

From Planarity to Virtuality: The Standpoint of Direct Presentation

Although many parts of *Real Spaces* deserve extended discussion, I will focus on Summers' treatment of the noetic development of *planarity, virtuality, and metaopticality*. This thread in the book seems to me to set out Summers' most significant and original contribution, and it best represents his interests and methods. In it Summers' epochalism issues in a transcultural or world art history obeying his fundamental art-historical principle of abstraction toward notionality. As I have already suggested, however, the epochalism and the principle might be disentangled. In particular, planarity and virtuality seem to be noetically immanent – and historically emergent – in one another in ways Summers' world-historical narrative does not always acknowledge. His own anthropology would suggest that they are not so much successive way stations in world art history as ever-present notional possibilities in its cultural diversification. I will pursue this point in this and the following section.

In order to evaluate Summers' impressive achievement, we need to recall certain historiographical contexts. The planar order of pictures produced in many cultural traditions around the world and throughout history has been an object of art-historical investigation for more than a century. The term “planar,” of course, can refer *both* to the presentation of depicted *objects* as having clear and prominent planes *and* to the organization of the plane of the *picture*. In remarking what Summers calls the “planarity” of a picture, art historians (though they have not used his word) have tended to point to what has sometimes been called frontality – the more or less thorough-going *identification and coincidence* of the significant planes of a depicted object (whether these planes belong to its real front in its actual display or use or to its top, back, or other sides) with the plane of the surface of the artifact itself. Frontality (or more exactly frontalized planarity) is prominent in pictures made for elite, ceremonial, religious, or apodictic purposes in many ancient and non-Western civilizations. In addition to providing a legible (if restricted) image, it enables a tight visual interweaving of figuration and ornament, heraldry, emblems, hieroglyphs, and

other kinds of graphic display with which figuration has typically been conjoined in non-Western cultures – often within the same overall frame. In the Western tradition, frontality tends to maintain its hieratic connotations, which sometimes subordinate available naturalistic procedures; often it has been deployed for purposes of “visual communication” rather than pictorial illusion.

To be sure, art historians since the end of the nineteenth century have tried to address the transition – sometimes called the rotation – of planar depictions into foreshortened, perspectival, and spatialized constructions of the kind found in naturalistic pictures made in the Western tradition derived from Classical Greek and Hellenistic painting and sculpture (including painting and sculpture made – often by Greek artists – in the Roman orbit). Indeed, the rotation of frontality – the mitigation or modulation of planarity and what Summers calls the elaboration of virtuality – has been thought to be one of the chief transcultural developments in world art history. If we believe Erwin Panofsky or Gombrich, it bespeaks momentous cognitive and cultural shifts.³ Most art historians who have investigated the supposed world-historical break between planarity and virtuality – between frontal and foreshortened images in the usual understanding – have supposed that it should be located in the changes wrought by Classical Greek artists (and their Hellenistic and Roman successors) on

³ In his transhistorical overview of the development of one-point perspective pictures, Panofsky proposed that the naturalistic pictures of the early Italian Renaissance unified the plane of the picture (as the so-called plane of projection) by rotating the planes of depicted objects *away* from their frontalized presentation (as they had been organized in ancient Egyptian depiction) in the direction of, or in orientation to, the new axis given by the “centric ray” of the visual pyramid – the line of sight from the standpoint to the notional vanishing point. Of course, as Panofsky well knew, rotation away from frontality need not be equivalent to rotation *toward* this main co-ordinating axis (it is perpendicular to the plane of the surface, to the picture plane or plane of projection, *and* to the planes of any and all frontalized objects). In Analytic Cubist inventions, for example, both rotations toward and rotations away from fully frontalized planarity can be interweaved without the emergence of a unified co-ordinate space (because there is no one controlling axis perpendicular to the plane of the picture – as opposed to the planes of objects). Thus for Panofsky the role of the centric ray – the emergent axis of an observation of space different from the notional axis of observation of objects in frontality – required the most careful theoretical and historical investigation. As we will see in the next section, Summers pursues and develops this point. Here it should be noted that despite Panofsky’s emphasis on the new space of linear perspective projections, he also wanted to draw a world-historical contrast between nonnaturalistic planar-frontal image making (especially in

depictive conventions acquired in part from pharaonic Egyptian and ancient Near Eastern sources. In a highly suggestive revision of this scholarship, Summers would relocate the historical development of virtuality: it is noetically emergent *in the planarity* that were produced in the artistic traditions ancestral to Greek art – specifically in canonical picture making in ancient Egypt – and in principle that can be produced in any tradition of planar depiction. I think this insight is broadly correct. But it raises problems that Summers has not fully resolved.

Heinrich Schäfer, Gerhard Kraemer, and other theorists of Egyptian and Near Eastern arts conceived what Schäfer called “pre-Greek art” (for him it includes the art of young children and untutored adults in the Western tradition) to be relatively or even absolutely planar in its decidedly frontalized presentation of depicted objects. Frontalization seems in part to require the reduction of objects to their sidedness; the real volume, whatever its three-dimensional shape, must tend in the pictorial image to be (re)constituted as the planes of its sides or facets – even though any such reconstruction often needs to depict entirely nonfaceted or smoothly curving volumes. Kraemer called this kind of construction “paratactic”: to Greek-influenced Western eyes, discrete facets of an object appear simply to have been laid side by side without any modulation between or blending of the juxtaposed planes. But we must be careful not to conflate frontality and paratactic construction. An ancient Egyptian scribe-draftsman could present certain objects in a pure paratactic construction: he could conjoin a side and the top of a box or a table, for example, as two contiguous planes – one drawn in “elevation” (the front or a side) and the other drawn in “plan” (the top). The artist did not always have this opportunity, however, and when he did he did not always take this route. Although pure paratactic planarity is well suited to the representation of carpentered right-angled objects like buildings or items of furniture, as a general technique of pictorial construction it can only be a relative or – Summers might say – a

ancient Egypt) and the effects of naturalism achieved in the atmospheric perspective of Greco-Hellenistic painting and relief.

notional possibility. In the depiction of many kinds of things, especially organic or living bodies, it cannot be fully attained; to apply it fully will result as much in the decomposition or even the disfiguration as in the informative representation of such objects. Indeed, the very nonattainability of pure paratactic planarity (and its multiplanarity) might be seen as a kind of *de facto* immanent virtuality *avant la lettre*.⁴ For this reason alone we should be cautious in assuming that extreme frontality must be the basic or primal condition of depiction – as it were its default cognitive or its earliest cultural state. The extreme reduction of objects to their facetedness – and the extreme unfolding and frontalization of the planes so constituted – does not inherently result in an immediately intelligible picture even though it might have its own internal logic and symbolic significances. Planarity in most traditions combines a certain amount of pure paratactic organization with a broader commitment to constructing a readily legible image – a well-bounded description of the most informative aspects of things.

Paratactic planar construction has sometimes been called “side-changing”: the depiction leads us around the sides of the object as if we successively face each of its facets as they have been frontalized. This imaginary movement is not, of course, a smooth circumambulation of a three-dimensional object continuously presenting itself for a continuously coherent inspection. Instead it sequences discrete looks at separate sides and planes of the object. It occurs because a deeper principle is at work – the broader commitment, mentioned above, to identifying an aspect or aspects of an object that will *fully inform the observer of the*

⁴ To bring different frontalized aspects of the depicted human body into an alignment surrounded by a continuous contour, the Egyptian scribe-draftsman had to construct a montage between a “frontal” view of the shoulders, pectorals, and sternum and a “profile” view of the two legs. As a result the body between the upper abdomen (as high as the nipples) and the hips (as low as the thighs) does not appear to be either fully frontal or fully profile. It is not obvious, however, that it should be described – as some commentators would have it – as a “three-quarters” or “two-thirds” planar view. If it is planar at all (i.e., presented as a facet between fully frontal and fully profile sides of the body conceived as a kind of notional four-sided pillar) it seems to be undergoing a continuous modulation. At the base of the sternum it is almost fully frontal (and smoothly continues what lies above it) but at the level of the waist, a few centimeters lower in the actual anatomy in question, it has become almost fully profile (and smoothly continues into what lies below it). I think it is impossible to deal with this construction in terms of pure paratactic planarity.

shape of its volume. For this very reason, as Summers' analysis shows, the virtuality of *volume* is immanent in planarity if it is not actually emergent there.

In obeying the injunction to reveal the volume-shapes of objects, the artist must sometimes place *several* such aspects (ordered as planes or facets of the whole) side by side – creating paratactic complexities like the plan-and-elevation construction of furniture and buildings (Panofsky took them to be diametrically opposed to one-point linear-perspective projections) or even the “frontal-profile” construction of the human body in canonical Egyptian pictures. But in principle a *single* well-chosen frontalized-planar aspect – in the simplest cases, any flat side of a cube or any curved surface of a cylinder – will do the job so long as it describes the shape of the whole as it would be “frontally” apprehended by an observer standing before and looking at any *other* side or any *other* surface as well. In a nearly untranslatable neologism, Schäfer – the most important theorist of nonnaturalistic image making in world art – called such configurations *geradansichtig-vorstellig* or “directly-observed-presenting” (sometimes abbreviated to *geradansichtig* or “directly observed” or “directly presented”). His term might be rendered in English as “aspective”; his German editor calls the construction in question *Aspektive*.. Because “a-spective” could be taken to denote “not perspectived” or even “not seen,” this term might have the unwanted implication that *Geradansichtigkeit* does not “make a presentation” of objects (*Vorstellung*) on a “line of sight” or axis of observation (*ansichten*). To be sure, ancient Egyptian and other planar depictions describing the shape of volumes were not constructed as perspective projections; they do not have the *viewpoint* of a one-point perspective depiction or other virtual-*spatializing* construction. This does not mean, however, that they lack a standpoint. Schäfer's terminology is perfectly clear that *geradansichtig* pictures “see” objects from a particular place assumed as the observer's and provided for him or for her virtually in the pictorial construction. Indeed, *Geradansichtigkeit* sees the shape of objects very well in ways that foreshortened and perspectival constructions often do not or even cannot see when they depict objects in space.

Unfortunately, it has been said all too frequently that ancient Egyptian and similar nonillusionistic configurations present “not what the artist sees but what he knows” – a gross misunderstanding of Schäferian *Geradansichtigkeit*. (Far from depicting “not what the artist sees but what he knows,” *Geradansichtigkeit* specifically “sees what is known.”) Even Gombrich sometimes made this slip in characterizing what he called conceptual images. And undoubtedly it has made it difficult to understand what *Geradansichtigkeit* sees: the *standpoint of direct presentation in planarity* – what we might call the *place of its visual knowing* – has not, I think, been properly recognized, in part because all such places have tended to be conflated with, or reduced to, the *viewpoint*-place reified in perspectival naturalism. Despite marshalling the evidence for a more adequate analysis, Schäfer himself did not fully grasp the architectonic situation of *geradansichtig-vorstellig* depiction in ancient Egypt because he took it simply to be the natural predisposition of ancient Egyptian (and in general of all “pre-Greek”) mental life. For him it was as much a primary depictive reflex as a pictorial construction – inherent in Egyptian consciousness as a subrational racial inheritance rather than proposed in Egyptian culture as a set of deliberated social practices. Although he identified the *Vorstellung*, then, he did not really interpret the *Ansicht* of canonical depiction in Egypt.

When Gombrich popularized Schäfer’s analysis of pre-Greek *Geradansichtigkeit*, he perpetuated the notion – though for reasons quite different from Schäfer’s – that conceptual images subsist as a human habit. For Gombrich such depictions are substitutive at a purely reflexive level (like an animal’s reflex in *taking X for Y* – a stone taken for an egg) or at a strictly functional level (like a child using X to *serve as Y* – a stick serving as a horse) as opposed to specifically representational (like an artist letting X *stand for Y* – a set of marks making a horse-picture even though this artifact probably would not be mistaken for a horse *by a horse* and likely will not be ridden by the child seeking a hobby horse). For Gombrich, then, the conceptual image is the primordial condition of visual knowing – the most immediate transcription of the essential hypotheses (or schemas) of knowing itself. It can always – and probably should

be – modified by experience and experiment toward a greater naturalism, a knowing that is more subtle, realistic, and informed precisely because it is less certain in its stereotypes. In this respect Gombrich turned Schäfer on his head. For Schäfer, *Geradansichtigkeit* embodied the greatest knowingness of which pre-Greek peoples were capable. For Gombrich, the conceptual image represents the starting-point of human intellectual progress – as witness the Greek development of Egyptian conventions. Either way, however, and despite Gombrich’s professed anti-Hegelian posture, this entire line of interpretation can be traced to Hegel’s belief that the crystal-like order of Egyptian and Islamic sculptures and buildings incarnate the nonselfconscious awareness of their makers, that is, their inability to apprehend the constructed forms as elaborations of their own location – and in this case, as correlates of the place of what I have already called the standpoint of direct presentation. Indeed, for this art history in the end *it is as if there is no real human and social standpoint in pre-Greek art.*

In comparison with the strong planarity of Egyptian configuration, important phases of Greco-Roman art (including the naturalistic art of the Western tradition derived from it) can often be said to be relatively or even absolutely *nonplanar*. Nonplanar configurations tend to present the transitions or even the planar indefiniteness between depicted sidedness. They often show the modulation of a discrete plane (often in terms of a differential hatching, coloring, or shadowing) in turn bespeaking its implied position in space relative to an observer. In a famous formula applied specifically to Classical Greek sculpture, Emanuel Löwy called such constructions *vielansichtig* or “many-[side]-regarding”: the construction seeks to project volumes implicitly subsisting in a single spatial envelope, whether or not this whole matrix respects a single fixed standpoint (usually it solicits circumambulation even if residual sides and standpoints – *drei-* or *vieransichtig* in the case of certain Greek sculptural schools – can be identified).⁵ As Summers recognizes, this emergent virtuality need not be seen

⁵ Emanuel Löwy, *Die Naturwiedergabe in der älteren griechischen Kunst* (Vienna, 1900) (*The Rendering of Nature in Early Greek Art*, trans. John Fothergill [London, 1907]). Löwy’s inquiries into the noetic organization of Greek sculpture were rooted in attempts, published in 1884 and

as a transcendent departure from the spatiality immanent in *geradansichtig* pictorial constructions properly understood. As Summers' analysis suggests, we can move *from* planarity *to* virtuality on a continuum. And there's the rub. Insofar as *geradansichtig* depiction engaged this continuum, virtuality might be said to be essentially immanent in it – even if *Geradansichtigkeit* seems to be found only at the pole of extreme planarity. Indeed, planarity permits its own kind of emergent virtuality: as Summers emphasizes (departing from the approach advocated by Kraemer and innumerable Egyptologists following him), planarity in Egyptian configuration presents not only the paratactic (“frontal-profile”) sidedness. It also (and more fundamentally) shows us the implied *volume* of objects as grasped in a shape and surrounded by a contour (elsewhere I have identified it specifically as a *section-contour*) that *describes that shape from the standpoint of direct presentation*.

We come at last, then, to the fundamental question. What *is* this standpoint? And what is its relation to the real space of *geradansichtig-vorstellig* configuration? Here Summers make a decided advance on all previous inquiries (including my own): he applies his emphasis on the architectonic alignments – and the correlated centeredness – of ancient settlements and buildings (Chapters 2 and 3), including ancient Egyptian temples and funerary complexes (2.12, 3.4-3.5), to the depictions typically placed in and on them. The planarity of these images can maintain the axes of orientation in which they are embedded in real architectonic and social spaces. In particular, according to Summers “the plane is maintained [or constituted] when each point of its surface is treated as if demanding axial address, that is, address along a notional line perpendicular to

1891, to understand the artistic originality of the sculptor Lysippus – in particular his interest in presenting figures as if were reaching into the beholder's space. On Löwy, see Emanuel Löwy: *Ein vergessener Pionier*, ed. Friedrich Brein (Vienna, 1998), *Kataloge der Archäologischen Sammlung der Universität Wien Sonderheft 1*, and especially Louis Rose, *The Survival of Images: Art Historians, Psychoanalysis, and the Ancients* (Detroit, 2001), 64-73. As Rose notes, according to Löwy the Archaic and Early Classical Greek painters and sculptors “not only contributed to the store of remembrance” in replicating their “spontaneous memory-pictures” (or what Gombrich would later call “conceptual images”). They also “multiplied the angles of vision” from which objects were observed in pictorial construction and in so doing “completed those images which had

the plane of the surface itself” (p. 351). Of course, such address is physically or literally impossible; we do not and we cannot axially address every point on a surface. Moreover, the “notional line” of address might not be capaciously accommodated in actual architectonic space; indeed, the real space of “axial address” might conflict with its notional organization in the planarity of the image. (As we will see, Summers’ paradigmatic example involves this disjunction.) But in principle the maker of pictorial planarity can construct it to be maximally adjusted to the notional possibility of axial address “by treating implicit or explicit volumes as if their sections were invariably seen along lines of sight perpendicular to the planar format” of the surface of the artifact – creating a “display of defining shape most fully present in the plane at all points” (p. 353, and see Figs. 150, 151). And this planar (or planarized) depiction can be calibrated to the alignments of axial address that subsist in real architectonic and social space all around the depiction. Thus the depiction will prolong – it will tend to replicate and refine – these real-spatial alignments as it were at every point in the pictured world: in principle it will always fully “face” the observer always wholly aligned on a real-spatial axis of Schäferian direct address to it.

Summers’ observation is far-reaching – and it is right, I think, as far as it reaches. But if we remark certain subtleties that Summers does not fully explore, we can see the limits of the real-spatial analysis he advocates. The calibration between *real-spatial* and *picture-planar* axes might (though it need not always) enfold an immanent disjunction between the constructed axiality of the real space of the depiction *qua* artifact (typically that real space organizes a “path” or even a line of access and address [see Chap. 2.10, 2.12]) and the proliferated axiality of the depiction *qua* image (i.e., the *geradansichtig* axiality of “every point on its surface”). The axiality constituted in planarity must be extended in the vertical or horizontal spread of the real surface of the picture laid out for observers as well as carried through the implied extensions of the depicted world. For this very reason, however, at a certain threshold it might escape the

survived from primitive memory-pictures” in increasingly naturalistic terms (ibid., 68) even though “primitive memory forms persisted or reappeared within the classical artwork” (ibid. 70).

axiality constructed in its real-spatial architectonic envelope. Stated another way, the planar depiction cannot always fully face its aligned observer at every point *simultaneously*. Eventually the observer must move off any given axial alignment precisely in order to (continue to) be fully faced by the image continuously at every point. “Planar presentation,” as Summers says, “may imply movement on the part of the observer in the real space before the image” (p. 353). And there’s the rub. The smallest and most compact planar presentation might not require us *actually* to move; our real angle of vision at a single standpoint (perhaps specified by an architectonic alignment) will provide sufficient “as-if” axiality for comprehensive planarity in the image to be maintained visually. But in facing any larger and more spread-out planar presentation, the observer likely will have to move *from* one standpoint of observation *to* other standpoints in order to assess the image – that is, to grasp its picture of volume-shapes properly.⁶ In real-spatial terms, then, the phenomenal

⁶ As I have developed it here, Summers’ analysis allows us to define this “largeness” with some exactness. A pure planarity can only be encountered when the observer can look fixedly “straight ahead” – the Schäferian *Geradansichtigkeit* – and see the entire image in clear focus without moving his or her head or actively swivelling or scanning the eyes (saccadic movement occurs involuntarily and below the threshold of awareness) and certainly without repositioning the body in front of the surface of the depiction. At a distance of about two feet from the eyes, this image is about two or three inches high and wide. (The relation devolves, of course, from the fact that binocular stereoscopic vision is also foveal. I refer to our visual-noetic *awareness* of seeing a flat plane head-on – not to pure geometric-optical axiality. Pure geometric-optical axiality is relative to a *point* – not to a plane, to a surface or a shape. As we will see momentarily, this presents difficulties for Summers’ real-spatial analysis of the “notional” construction in question.) In this scale and situation, an image can display planarity *not only* in notional terms (i.e., the as-if continuously-axial address identified by Summers) *but also* in phenomenal experience (e.g., the absolute *visual* “flatness” identified and reified in one tradition of modernist art criticism). It is precisely with pictures in this situation or at this scale relative to an observer that problems of depictive ambiguity and visual disambiguation – e.g., in confusing a close-up planar shape presented on the real surface of the painting with a far-away real object depicted in the depth of the picture – must be most acute. (I have elsewhere described this conflation and disambiguation as the “mark/thing” replicatory series that stands at the “origin of image making.”) But it goes without saying that the vast majority of images in the history of art – even in modernist arts beholden to the idea that the depth of the picture should palpably submit to and perhaps even relay and represent the flatness of the painting – were not made for this real-spatial situation. And any “larger” array of depictive marks must possess some degree of immanent virtuality – some emergent “thingliness” – by the terms of Summers’ own demonstration: it cannot actually be *seen* all at once as a whole on *axial* lines of address to every point on its surface even if it is notionally constructed – in its so-called planarity – for this kind of *Geradansichtigkeit*. Indeed, in their very “largeness” late-modernist paintings – such as the set of paintings in the Rothko Chapel considered by Summers – retrieved their specifically imagistic

vividness or power of planarity in an image – indeed, its very existence *as* planarity and “facingness” – crucially depends on the real size (the height and width) of the actual surface *of* depiction in relation to the real size (the height, width, and depth) of the real-spatial corridor of alignment *to* that surface in which the observer is actually located. True visual-spatial planarity can be maintained in most images (except the very smallest) only when the axiality internal to the image can “move” in constant coordination with axialities prolonged from its external locations. Indeed, in principle planarity would seem to place the depiction and the observer in a relation of constant relative motion – as it were an interdigitation of their mutual confronting that might be compared to a closing of the two interlocking tracks of a zipper. In practice, however, the depiction might reveal alignments in real space – and in the correlated-facing surfaces in the depicted world – potentially quite different from those displayed in the strict axiality thought to be constructed there.

One such disjunction could become visible, paradoxically enough, precisely *when the observer does not move* relative to the horizontally and vertically spread axialities of planar presentation – that is, when the *continuous* planarity of depiction laid out on a spread-out surface confronts a *stationary* observer. Of course, even when the observer can and does – and maybe should – shuttle along

potential; they managed to construct not only a notional or metaphorical but also a phenomenal or literal “depth.” By the same token, the “small” image – it might tend toward or even be visually confused with the pure planarity of an absolutely flat real shape – need not be purely planar: even at this small scale and in this restrictive situation, a picture maker can produce extraordinary virtualizations. These illusions will be all the more persuasive because they occupy the very domain – “straight ahead” and “close up” – in which planarity supposedly can make its own most unambiguous and irrefutable presentation. Certain modern painters (Cézanne is the best example) have imagined a painting that would be composed (as it were) of approximately two-inch-by-two-inch “small” depictions within a “large” picture – an overall configuration in which planarities might be coordinated with the virtuality that emerges in any picture that is not merely a paratactic array of roving microscopic observations of small planarized patches of things in the world. To be sure, these peculiar modern paintings have called forth – if they have not intentionally solicited – a “formal analysis” that has wanted to look intensively and “closely” at each of their constitutive patches. The fact that planar “smallnesses” seen “close up” – or their ideological exaltation – continues to bedevil accounts of spatiality, virtuality, ambiguity, flatness, abstraction, figuration, etc., in “large” pictures bespeaks the grip of the psychophysics and neurophysiology of vision on art history since the late nineteenth century (we might say that “close looking” is the physiological aesthetics of art history). This grip has been strongest – in modernist art criticism – where it has been least interrogated.

the zipper of the image he or she can probably also stop and stand at any point. (Again we can speak of actual locomotive movement before the image or simply of the movement of the head and eyes.) At any of these stop-points the continuous visibility of the continuous axial planarity spreading horizontally and vertically away from that standpoint can come into question: the image of volume-shapes will face the observer on increasingly less parallel lines of supposedly axial (i.e., uniformly parallel) address the further its real surface lies from the stop- or standpoint. By the same token, the picture maker can rotate the planarities of depicted volume-shapes *away from* the continuous as-if axiality of *Geradansichtigkeit* and *toward* a facing of one fixed stop- and standpoint. To use Summers' term, the relative "dependence" that planar presentation might come to have on a stationary standpoint (ultimately that stop point will be constituted as a "viewpoint") can be equated to its relative "virtuality." In other words, Summers would convert any phenomenal *differential* between real-spatial axiality in the picture's architectonic envelope and the notional axialities of planarity in the depiction itself into emergent virtuality. This is largely because the stationary observer's *off-axial* address to outlying section-contour-surfaces in the depicted world – or at least certain regions of points on such surfaces – implies not only the "completion" of the implied volume (this must happen in continuously axial observation of planarity) but also requires or solicits our "detachment of [the] contours [of the volume] from the plane" (Fig. 152).

This is an ingenious proposal. In an important sense – Summers recognizes but does not fully explore it – virtuality would seem to have emerged *throughout* planarity as its visual-spatial and noetic complement, and even as its condition, for the simple reason that there can be no pure planarity in phenomenal experience in the first place. To use Summers' term, planarity is merely *notional*; specifically, it requires "notional lines" of axial address. Even and perhaps especially when real-spatial alignments and centerings constitute particular axes of architectonic orientation – and therefore an emergent axis-preserving planarity – at the same time and in the same construction they tend to create stationary stop points or fixed standpoints – and therefore an emergent stop- and

standpoint-preserving virtuality. In the two chapters he devotes to places and centers, Summers considers the conditions of alignments and stop-points. They must be reciprocally determined; in the simplest case, a place has a center and a center observes a place. But in Summers' following chapters on planarity and virtuality, and despite his insight into their history, he does not pursue the point that images typically devolve from – they are constructed for display in – the real-spatial context of this primal involution, this complex (re)orientation and (re)punctuation of an observer's real corporeal and observational motion. To reduce the matter to a simple formula, planarity is to moving axial alignment (and what Summers calls the "independence" of the image) as virtuality is to stationary stop-, stand-, or viewpoint (and what Summers calls the "dependence" of the image). To be sure motion and stasis or axial and off-axial observation – independence or dependence – might seem to be diametrically opposed conditions of making and observing images. But axial alignments and stationary viewpoints are as a line with points is to points on a line: in principle they are notional entailments and in practice they can be real-spatial developments of one another. For this reason, it cannot always be the case, as Summers would have it, that "planarity and virtuality are defined in opposition to one another" in real-spatial terms (p. 354) (even though this might seem to be true of them in a largely notional geometry – such as Fig. 152 – that wholly abstracts its scheme from any real-spatial situation). Far from being opposed, planarity and virtuality can be mutually productive and they must be threaded together in any phenomenal experience of a spread-out image laid out on a large surface – an experience located, as it must be, in real space precisely as Summers shows. Indeed, in his cultural history Summers proceeds – against the drift of his principle of the opposition of planarity and virtuality – on this very basis.

If we revert to a philosophical language that Summers does not deploy (indeed, he seems to resist or reject it) planar marks or shapes displayed on a smooth real surface observed on a line of address kept perpendicular to that surface at every point nonetheless tend to be "seen as" something-or-other – a bodiliness or substantiality or presence of some kind. Indeed, something-or-

other tends to be “seen in” them – however vaguely defined it might be as a conventional two-dimensional projection of an extrapictorial object. These things or presences – perhaps they are simply graphic shapes or fields of color – will not always be flat planar presences and nothing other than flat planar presences: the painting (precisely insofar as it calls out a stop- and standpoint) cannot avoid being the *picture* of their thingliness – their virtualization when the painter sets out to submit a picture to the conditions of the planarity of the artifact within its real-spatial architectonic envelope of observers’ locomotion and alignment. Of course, so-called abstract painting – or some abstract painting – supposedly seeks to eliminate the virtuality of picturing; indeed, an abstract painting might not be a picture at all. But if an abstract painting is not to be entirely conflated with the wall on which it hangs – simply seen as continuous with the wall – it must be an image: in abstraction, painting virtualizes itself. And as all virtualization requires the phenomenal materialization of a presence that it is not literally there, the attainment of abstraction in painting cannot evade the operations of seeing-as and seeing-in: precisely as its own virtualization, the abstraction must be seen as a painting and, correlatively, the painting must be seen in it. Even if its thingliness or presence is brought into being only within the world of flat planar configuration – only in the world of pictorial abstraction from the world – it can be seen in the painting as something phenomenally distinct from what the painting itself really is as a flat marked surface. This presencing does not seem to be tied essentially to the axiality or non-axiality – the “independence” or “dependence” of the picture, or planarity and virtuality, in Summers’ terms. Rather it devolves from the essential discriminability of paintings and pictures from the world; however planar, if a picture – or painted image – is present at all for an observer, it must be present in part virtually. Axial “independence” and off-axial “dependence” are differences of degree on the continuum in which the virtuality of an image threads through the planarity of its depiction of objects. Summers’ analysis requires nothing more than this. As he himself shows, for example, “virtual volume” inheres in what seem to be paradigmatically planar depictions just as “virtual space” inheres in paradigmatically foreshortened or

perspective depictions. Virtual volume and virtual space are both modes and effects of seeing-into pictorial presences – relatively axial-planar on the one hand and relatively planar-rotated on the other hand.

Virtual Volume and the Virtual Coordinate Plane in Egyptian Planarity

All this might be admitted in theory – and Summers’ account helps us to do so. It is hard for the art historian to know, however, where we should actually identify immanent virtuality – in its degrees of both axial and off-axial address to both moving inspection and stationary viewing – in the cultural history of planarity. The virtuality of volumes whose sections are “detached” and rotated away from the painted surface would seem to be potentially emergent in Egyptian art because canonical Egyptian depictions – however planar in overall aspect – often should be observed from particular stopping points plainly constructed in the axial alignments of the real spaces of their display. (Sometimes these points were marked as a more or less fixed or permanent standpoint therein – a place to be occupied, for example, by the king or by a ritual observant.) But there is no reason to think that an ancient Egyptian observer – stopped at such a standpoint – assessed the one leg of a depicted figure directly facing him axially to be “planar” while simultaneously taking the *other* leg (it would have to be more or less off-axis depending on the real size of the image in relation to the real size of the observer) to be a “virtual volume,” its section-contour seemingly rotated toward *the same stationary point at which he confronts and is addressed by the first leg*. (This is the literal implication of Fig. 152.) Both depicted legs must be equally planar volumes, not just the axially viewed leg; and both depicted legs must be equally virtual volumes, not just the off-axis leg. But nor is there any reason to think that both legs were taken to be rotated (in opposite directions) toward an equally off-axial point of stationary address midway between them – or that both legs were rotated (in the same direction but to different degrees) to an off-axial point of stationary address to the right or to the left of both of them. In other words, we return to our basic disjunction: the

section-contour describing the volume-shape of each leg presents exactly the same information – the same description of the dimensions and relief of both limbs – *despite the fact* that the observer’s standpoint relative to an insistently planar depiction can be more or less fixed and stationary. To be sure, the particular visual problem I remark here would seem to be a minor one in the case of the close-together legs of one and the same depicted figure. But it must become more and more palpable when we encounter more and more elements spread more and more apart – different and discrete depicted objects or figures – presented by the same seemingly continuous planar image. Egyptian register composition, isocephaly, and other conventions of arraying the depicted contour-section-surfaces on the surface broadly regulated the emergent disjunction between *depicted plane section* and *plane surface of depiction*. In particular, they tended to promote the observer’s movement over and against his or her tendency to be stopped. Nonetheless, it is possible, I think, to see Egyptian artists struggling to coordinate the demands of overall planarity (in relation to real-spatial axiality) and the demands of local naturalistic detail (in relation to the actual “look” of volumes in space and light). To stick with my example, they were frequently bedeviled by construction of the proper thickness or width of a partly occluded – and thus putatively more distant – leg in the pair of legs belonging to a single standing or seated figure. Their generally “planarizing” approach to occlusion did not ordinarily allow them to vary the width of the two legs (see Figs. 218, 223). Still, the far leg was sometimes thinned out (precisely as in Fig. 152) in certain contexts. In these constructions it is *as if* we see the section-contour of the far leg on the bias (its width “shrinks” as its section “rotates”) relative to the full width of the section-contour of the near leg in full “head-on” profile. In this emergent virtuality, probably the image maker simply intended to present “less” leg visible in the far leg behind the near leg – maintaining the same axial line of address on both legs despite their apartness. But we could suppose that in its own turn this thin leg might have immanently suggested *diminution* due to distance or *foreshortening* due to bias – or both. This immanence – it shadows parts of the configuration – did not

result in the construction of a virtual space carried throughout the planarized depiction. And yet it contained the resources for doing so – resources exploited in local passages of the construction. We do not see the back or rear leg as *really* thin; rather, we see its thinness as a planar presentation of its behindness.

We might be justified, then, in turning from local passages of – and problems in – depictive configuration to the real-spatial situation of canonical Egyptian construction in its broadest architectonic and cultural contexts. Complex architectonic alignments ordered the funerary complex of King Zoser at Saqqara (Chapter 3.4 and Fig. 86). At the same time, this assemblage of structures contained depictions (diagrammed in Figs. 150, 151) that organize planarity in continuous coordination *not only* with the axial orientations (precisely as Summers' interpretation of *Geradansichtigkeit* would suggest) *but also* with the stop- and standpointing of the architectonic order. In this situation, does the planarity of Egyptian depiction constitute the imagistic virtuality of its real-spatial axiality? The paradoxical formula – it cannot really be accommodated in Summers' explicit claim that planarity and virtuality are opposites – is not as fantastical as it sounds. In context, an ancient Egyptian observer might have seen planar depiction in the way that we might see one-point perspective depiction – that is, as projecting an occupied and occupiable world continuous and coordinated with the one he believed himself to inhabit. Most important, one's *ka* can come and go from this world and the king traverses it. We might say that Egyptian depiction presumes not so much the virtuality of the image as the virtualization of the observer – his movement into the depicted soul-world with which his mundane corporeal being is at all points continuously aligned.

In this regard, I hasten to emphasize that Summers does not deny the emergent virtuality of Egyptian (and “Egyptian”-style) planarity. Indeed, he offers a highly suggestive account of one its crucial determinations – the contouring of painted reliefs (i.e., the treatment of the presumed edges of depicted section-contours) constructed between the forward or upper plane of the surface of the artifact and the parallel but lower, deeper, or more “distant” plane constructed by the sculptor in downcutting the surface (p. 445-47, and Figs.

221, 222; cf. Fig. 225). Summers helps us understand how this real-spatial deepness – as he says, it is a relation of the real surfaces of the artifact – can become emergent-virtual depth, a relation of the constructed surface planes of depiction transferred into the surfaces of the depicted world. In his example, one of the surviving low reliefs of the Egyptian “Master of Scribes” Hesire, made about 2600 B.C. for that official’s mastaba tomb at Sakkara, “we seem to see more of the volumes of Hesire’s body than is actually stated by the wood out of which they are carved.” This is because the lowness of the relief motivates us, Summers thinks, to “complete virtual volumes toward our own space *and* into virtual space, the two spaces meeting at the secondary plane” of the surface constructed when the relief itself had been produced. In real space, this secondary plane “is at a more or less constant actual distance from the original plane.” But Summers wants to argue that “the contours of the body on the second plane are at an *indefinite distance in the virtual dimension*” (p. 446; Figs. 218, 221, 222).

There is great merit in Summers’ proposal, and to my knowledge it has never been stated before. In some measure the effect in question might occur because the real surface of the carved figure subsists as what Summers calls “compressed relief.” As Summers points out, the observer can or perhaps even must “complete” the low relief as a “virtual volume” (Fig. 221). This volume contributes to the impression that the figure has a corporeality or substantiality considerably greater than its actual or real-spatial height in the relief-carving itself. (If the relief itself is only a few millimeters high, we can seem to see Hesire’s leg, as Summers rightly notices, to be several centimeters thick – that is, as thick as his leg really must be.) Still, I can find no intrinsic connection between virtual *volume* and virtual *depth* – and indeed canonical Egyptian low-relief sculpture shows us precisely why this is so. Hesire’s sculptor has presented the forward protrusion of Hesire’s ankle bone (as we would see it in real life) and the forward protrusion of Hesire’s calf muscles and flesh (as we would see them in real life) as if they lie on the same plane – as if “compressed,” as Summers puts it, into one and the same plane *despite* their different real sizes and conformations. (Each of these volumes is represented in Summers’ Fig. 222 by the sections BB’,

CC', and DD'.) In other words, they have been *differentially* compressed into the secondary plane; although they seem to lie closer to or further away from us in real life (the flesh of the calf would usually be seen to be nearer to us than the ankle bone), they have been given the same real-spatial or surficial height in the carving. To constitute the full virtuality of the depicted body, then, we would have not only to complete the virtual volume of each detail – the volume of the ankle bone, the volume of the calf, and so on. We would also have to (re)constitute the relative distances of areas of points (representing regions of the object's conformation) on its surface; this differentialized depth – as much as volume – has to be completed as such.⁷ In itself the flattened quality of Egyptian relief does not promote this completion or (re)construction. Although it suggests the voluminousness of things it does not fully suggest the variability of the distance of their surfaces from an observer facing them on a line of axial address. Instead it seems to put all regions of the surface in the same place – uniformly far away from, or close to, the observer. This very indefiniteness or under-specificity in the distance of volume tends, I think, to suppress the emergence of depth in the image – even if voluminousness as such tends to encourage it.⁸

Nonetheless, and apart from the question of its virtual volume, the real-spatial depth of the surface does help to create and to sustain a virtuality in the field of depiction. For one thing, in the reliefs of Hesire (as they are usually published and as they are now displayed in the Cairo Museum) the original real plane, the

⁷ Summers' Figs. 221 and 222, explicating the completion of virtual volume, elide this fact; the points closest to us on the circumference of the several completed volumes (indicated by broken lines) all seem to lie – just like the highest points on the real surface of the relief (indicated by solid lines) – in the same plane and at the same real height above the secondary plane of the relief. But virtual depth, as just noted, derives in part from the *difference* in the distance of the closest real points on the surface of the object – some being nearer to us and some further away. In Fig. 222, the highest point of each of the three broken lines should be at a visibly *different* height from the secondary plane.

⁸ It should also be said that Hesire's reliefs – virtuoso as they are – display a considerably more "rounded" modeling of contour than was usual in Egyptian relief, which mostly effected a "sharp" relief: the edge of figures is pretty much at right angles to the plane of depiction. The effects remarked in Summers' Figs. 221 and 222, then, though noticeable to us in many Egyptian reliefs, were not really a norm there. Hesire's sculptors tended toward an extreme virtualization of planarity. The immediate contextual or real-spatial reasons for this preference remain unknown. Elsewhere I have argued that in this and other details of style and iconography they probably expressed the artists' and the patron's cultural high modernity.

“top” surface of the panel, has been preserved all around both the figure of Hesire and the “depth” constructed by downcutting all around it. Summers makes much of this “frame,” as he calls it; it tends to constitute the field of the depiction as what Summers calls a “stage space.” For him, and most important of all, this space constitutes a “virtual coordinate plane” – as it were the plane of the floor of the stage – that subtends at right angles from both the original surface plane and the secondary and deeper plane constructed in the relief (as well as all other parallel planes that might fall between the original and the secondary plane or “behind” the secondary plane) and independent of whatever virtual volume might be suggested by the configuration (Fig. 220). In Summers’ account, this particular construction must be the place in which surficial planarity in real space becomes – originally emerges into – the “three-dimensional” virtuality of the image conceived in the potentially measurable terms of a possible “coordinate space” that in turn will ultimately devolve (in the early modern period in the West) into a general or metaoptical spatiality. In this respect the virtual coordinate plane is probably the most essential artistic invention identified in Summers’ transcultural or world art history.

Although Summers does not mention the fact, the real-spatial installation of the relief of Hesire probably heightened the effect of “virtual depth” supposedly produced in the modeling of the relief: one of eleven similars (of which six have survived), the relief was set into the back wall of a niche that tiered backward into the actual mass of the mastaba. This niche as it were moved the observer toward the afterworld of Hesire’s *Ka* (the niches were oriented to the west, the place of the departed) and as it were away from his or her restricted arena for movement and observation in the real space before it – a narrow corridor about one meter wide. (Indeed, the relief itself is tiered; the lower field in which the official’s depicted figure is placed is palpably deeper – as it were more distant – than the upper field in which the official’s names and titles were carved.) Just as the observer seems to be “going into” the niche, he or she can seem to be “going into” the depiction which is continuous with it. Other features of the set-up, however, do not fully square with this seeming encouragement of

an emergent virtuality. Despite the monumentality of the figure, in real size the relief is quite small; the whole panel, including a substantial uncarved part above the “frame” (and probably built into the ceiling of the niche), is only 115 cm high, and the figure itself is less than half that height. Moreover, it was set into the floor of the niche in such a way that the observer probably had to crouch down and peer into the niche in order to see the depicted figure at all. Hesire might have seemed to stand, then, on the *same real-spatial groundplane* as the observer – an unusual effect that presumably contributed substantially to the “virtual coordinate plane” Summers identifies as emergent in the relief. But at the same time that real-spatial grounding would have been uncomfortable; the virtual coordinate plane in the image could have only been experienced – or best experienced – by the observer in scrunching his or her body into the niche.⁹ The rationale for this set-up – unique in Egyptian funerary architecture – remains to be explored. To my mind there is an intriguing similarity between Hesire’s panels in their niches and the “peephole” constructions of the tomb chamber, the *serdab*, built to house the funerary statues themselves – the vehicles of the *Ka*’s existence and travel in the mundane world. In principle the statues could be viewed by celebrants (and accessed by the *Ka*) through a narrow horizontal slit in one wall – something like viewing the carved panels at the back and bottom of the corridor niches. It is possible that in its simultaneous “tunneling” of the architectural frame and its “miniaturization” of the depicted figure, Hesire’s installation attempted to stage – for the observer and for Hesire’s *Ka* – a kind of real-spatial passage between the mundane world and the afterworld; the real size and spatial set-up of this passage effectively constitutes image-virtual “depth” and distance. Indeed, it is possible that Hesire’s wood panels were made to be or to substitute for funerary statues (*Ka*-vehicles) as such. (In an enlargement of the tomb, the *serdab* in the mastaba of Hesire appears to have been built

⁹ The distinctiveness of this array – it is perhaps unique – should be underscored. Ordinarily the canonical Egyptian construction of depiction deployed a groundline presented as such in the depiction – that is, as a drawn or carved band placed well above the actual bottom edge of the real surface. In the case of the reliefs of Hesire, the groundline of the image is identical with the real-spatial groundplane of observation itself.

later – perhaps a full generation or more later – than the interior corridor with the eleven niches and built-in panels; ordinarily niches would have been located on the *exterior* of the structure. Perhaps, then, Hesire’s interior niches had initially been intended to host or support the functions of a *serdab*. When the *serdab* was eventually constructed, three statues – probably representing Hesire – were housed in it.) All in all, Summers is probably right that in their extraordinary refinement of planarity – that is, due in part to it – Hesire’s panels as installed in their real-spatial context had the quality of emergent virtuality.¹⁰

In most installations of relief, a groundplane literally underlies the depicted figures *real-spatially*: it is the narrow floor of the relief stage – the little shelf on which Hesire stands in the shallow box of the framed field of relief. This stage or shelf translates the depicted groundline usually produced in painting and drawing into real surfaces of the artifact. Contrary to Summers’ particular reconstruction, the actual installation of Hesire’s relief in its niche might have obscured the “frame” of the panel; the frame was likely built into the mass of the walls and roofing of the niche. In turn, then, the shelf of the relief would likely have appeared to be entirely continuous with the observer’s real groundplane. (Despite its mistaken view of the “frame,” Summers’ interpretation would readily accommodate – even predict – this effect.) Instead of making a small “step up” to the relief stage,¹¹ the observer in real space could as it were *walk on the same plane* right into the stage space – as it were actually performing the axial approach that the planarity of depiction notionally demands for each and every point on its surface. (Of course, as I have already noted, the real size of the relief

¹⁰ All these delicate, subtle, and profound relations – I agree with Summers that we are dealing with the most fundamental emergences in the history of art – might have been exceedingly difficult, even impossible, for original Egyptian observers to have “seen” or to have experienced corporeally in real-spatial contexts. As Summers points out, Egyptian reliefs were fully painted in flat, uniform fields of color. It might be asked whether the observer could actually apprehend the putative virtualizing effects of Hesire’s light relief in its painted finish. It is only relief, in Summers’ account, that has “virtual depth” in virtue of its real-spatially modeled edges and surfaces; in Egypt, painting was not used, *qua* impasto, to create relief, nor did painting a relief tend to help present or reveal surface properties – let alone virtualities – constructed in the relief. In practice, then, the planarity of painting might have obscured or overwhelmed the immanent virtual depth of relief. For the sake of the wider argument, I will set this matter aside here.

in its peculiar position in its niche in relation to the narrow real space of the corridor from which any observations can be made would not have permitted this transition – and visibly so. But for the sake of the wider argument we can set aside this issue.) A real surface *in* the artifact continues the real surface *on* which the observer stands. This interior surface, of course, is only as deep as the real depth of the relief itself (in the case of the relief of Hesire, a few millimeters); thus it would be equal to the real-spatial depth of the “virtual volumes” supposedly constructed by the low relief and rounded modeling of the section-contours. And it is a surface – a plane – in real space; it is actual, not virtual. Still, as a real surface it is “around” and “below” the real depth of the surfaces of the depicted figure and whatever “virtual volume” they might be completed to have. And what Summers calls the “virtual coordinate plane” supposedly continues it implicitly or notionally “behind” the secondary plane of relief – the deepest and most “distant” point of the real surface facing the observer. According to Summers’ formula, the virtual coordinate plane is the “ground line extended as a plane into the virtual dimension as it stands in a definite if barely explicit relation to the [vertical] plane of the surface; it is *perpendicular* (or ‘co-ordinate’) relative to the plane of the surface of the format, and therefore develops from the assumed planarity of this surface” (p. 446, and Fig. 220). In slightly different terms, the surficial (or artifactual) planarity that really subsists around and below the depicted figure – and notionally behind it – virtualizes its configured (or depicted) planarities. To my mind, as a strictly art-theoretical proposal – an analysis of the coherence of images – Summers’ identification of the virtual coordinate plane is extraordinarily significant; I am not aware of a writer who has made it before. At the historical level, as Summers says, it seems that “Egyptian painters and sculptors made choices that were to establish the basis of Western metric naturalism . . . accomplished by the development of planarity into the virtual dimension, with consequences reaching to the present day” (p. 445). Much of *Real Spaces* can be read as exploring the afterlife of these “choices.”

¹¹ This step is implicitly visualized in Summers’ Fig. 220, which accepts that the frame was installed to be visible to the observer – and to promote the completion of virtual depth.

I have no doubt that the virtual coordinate plane was *immanent* in Egyptian relief. Retrodictively it can certainly be seen by us in those reliefs precisely by looking at them off-axially or on the bias. (We can map the experience exactly as Summers does in his Fig. 220, which reconstructs an experience of looking at the relief of Hesire off-axially from the lefthand side – more or less as if we are standing in the interior corridor of the mastaba at the leading edge of the niche in which the relief was installed.) In particular, we can see the virtual coordinate plane when we look *down* on it and as it were “through” the virtual depth it grounds. Maybe it was fully emergent in constructions such as Hesire’s virtualizing installation. (As I have noted, the installation required the observer to crouch and peer down as it were into the depiction. Here the virtual coordinate plane notionally continued both a surficial groundplane in the depiction – the little shelf of wood below the low-relief figures – and the real-spatial groundplane of the observer.) But Hesire’s installation was distinctive, and Summers has also rightly told us, as we have already seen, that continuously axial observation – distinct from off-axis observation from the side or from above – was the rule in canonical Egyptian depiction. If observers had rarely seen a constructed configuration like Fig. 220, we might ask whether it would have been possible for them to realize – to make and to see – the virtual plane that was immanent in the image.

We must wonder, then, to what degree the virtual coordinate plane was fully and widely *emergent* in Egyptian art. Summers does not address the question explicitly. At points it seems that he wants to take it to have been quite fully emergent: in Fig. 220 (admittedly offered for heuristic purposes) the virtual coordinate plane is produced into a considerable if indeterminate depth – a tunnel much “deeper” than anything that could be constructed by the observer as the virtual depth of the completed virtual volumes of the depicted figure itself. As Summers visualizes the situation in Fig. 220, the virtual coordinate plane is indicated to be at least as deep as the depicted figure is high. Yet we must ask whether the diagram is fully warranted in producing the plane to this degree. As I have already noted, the virtual depth of volumes completed “in front of” the

secondary plane and the real depth of the plane of the relief shelf are equal. In its forwardmost part, of course, the virtual coordinate plane is equal to that very quantity – for that quantity is the actual or real-spatial (surficial) quotient of the coordinate plane. In turn we might suppose that the virtual depth of the coordinate plane was not experienced to be much deeper than this not-very-deep quantity; perhaps it merely doubled it by completing volumes “behind” as well as “in front of” the secondary plane of relief (as visualized in Figs. 221 and 222). This would not prove that there was no virtual coordinate plane at all. Indeed, Summers’ notion of completed virtual volume seems to entrain the constitution of a coordinate (ground)plane parallel to – and equivalently deep as – the virtual depth of the depicted object(s). But if the image simply recognizes and constructs the groundplane immediately below depicted volumes its virtual depth would be very restricted – a kind of discreet atmosphere or vague aura immediately around a depicted figure but not extending indefinitely outward into a space all around it. In these circumstances the virtual coordinate plane might have been a hazy effect rather than a basic condition of representation. Summers might admit this when he acknowledges that it was “barely explicit.”

If the virtual coordinate plane was not *fully* emergent in Egyptian art, however, seemingly Summers would take it to be *widely* emergent. Supposedly it appeared not only in low relief, where we can identify real-spatial and surficial warrants for its observation – namely the shelf or stage of relief. It appeared also in painting – where the groundline itself, though it has width, is not a surface with real depth. Summers draws his prime example for this possibility from the north wall of the Twelfth-Dynasty painted tomb of Khnumhotep II at Beni Hasan (Tomb 3, painted about 1880 B.C.) – a vignette showing two farmhands feeding two tamed or perhaps domesticated young oryxes (they might be the same beasts shown being caught in the desert hunt depicted elsewhere in the tomb). The scene is one of four similar scenes on the same groundline; from left to right they show the feeding of three birds, the two oryxes, four goats, and three cattle. Beyond the rightmost scene of feeding the cattle, the same groundline continues to the observer’s right to show two vignettes of fighting bulls before montaging

in turn into the groundline below a procession of officials facing the large figure of Khnumhotep himself. Needless to say, the entire painted tomb-wall (approx. 9.5 meters wide) presents a very spread-out depiction; requiring the observer's continuous movement along its lateral extent, it zippers a complexly segmented narrative of the master's command of his estate. The vignette of feeding the oryxes is well chosen to make Summers' point. But it is somewhat – even highly – anomalous in its deployment of the canonical Egyptian conventions of depiction. Ordinarily the register composition of Egyptian wall painting and painted relief went to great lengths to avoid substantial overlapping and occlusion – lengths that were made quite literal in the lateral spreading and correlated real-spatial movement just mentioned. But these particular pictures by Khnumhotep's artist, as a recent commentator on his tomb paintings has put it, "are rather naturalistic, with the animals and their caretakers shown interwoven in realistic-looking ways."¹² The figures may look "realistic" to us. It is plain, however, that Khnumhotep's artist struggled with their arrangement. Contemporary observers might well have been puzzled by the configuration.

According to Summers, in the scene of feeding the oryxes the virtual coordinate plane "accommodate[s] [the] volumes of overlapping figures by treating the virtual plane as if divided by transversal lines parallel to the plane of the format" (p. 448, Fig. 224). Each of these transversals supposedly produces a plane – there are at least three of them – for the construction of depicted figures increasingly "set back" in virtual depth. Indeed, that depth supposedly has an observed measure of *distance*: "these completed volumes triple the distance of the articulated passage into the virtual space, [and] it is crucial to note that the virtual co-ordinate plane is always respected, by which I mean that the figures are always shown as if standing upon the same plane extending into virtual space from the baseline" (p. 448). Whence this tripling devolves – Summers measures it out neatly on the virtual co-ordinate plane visualized in an axonometric reconstruction presented in Fig. 224 – is somewhat mysterious. In

¹² Janice Kamrin, *The Cosmos of Khnumhotep II at Beni Hasan* (London and New York: Kegan Paul International, 1999), 100.

the painting the depth or the distance, if any, is not only indeterminate but also ambivalent – at once shallow (as if all the figures are standing on the same very narrow plinth, shelf, or stage) and deep (insofar as the standing man is shown to be behind the standing oryx in turn behind the crouching oryx). The artist seems to observe a distance – implied by the occlusion – between the standing oryx and the man behind it; he tries to show this in the spread of the man’s shoulders and arms, with right hand grasping the horns of the beast and left hand pressing down on its withers. In real life, then, the head of the beast would have to be twisted around and placed “behind” the man’s backside. But the artist cannot find a way to depict this interlocking of the figures even though he shows the complementary twist in the man’s shoulders. The artist almost seems to look down on the man’s shoulders from a place above them – and to that extent also seems to see the virtual plane on which the man and beast are standing – in a construction that is both a foreshortening and a kind of axonometry. But likely this construction was arrived at by trial and error; it has little normative status. And if it constructs an incipient virtual coordinate plane, that plane is not, as Summers would have it, “always respected” by the artist. The canonical system of proportions dictated that the observer would take the man to be standing on a hidden mound behind the crouching oryx – for in one sense he is too “high” and his legs are too “long” to be standing on the same groundplane as the other, crouching man, even though in another sense he can be seen to be just as “tall” as him.

If Khnumhotep’s painting constructs the virtual coordinate plane in Summers’ sense, the plane – an immanent horizon of the image – equally interferes with the construction of the picture. Again, this is not to say that the plane fails to emerge in the painting – in the artist’s inventive struggle with his motif. It is only to say that it had likely not attained notional stability for observers – including the artist – accustomed to the conventions of Egyptian depiction. And it is hard to know how it could have emerged into notionality except by translating the conventions of Egyptian depiction into the modern Western conventions – they are far more involved in the spatial virtuality of “three dimensional coordinate

space” – that Summers himself has had to assume in his Fig. 224 in order to illustrate the supposed conditions and effects of Egyptian planar virtuality.

To be sure, if the virtual coordinate plane *had* been fully established – as Summers urges – it could have radically virtualized the surfaces of Egyptian depictions, constituting them as the real-spatial compressions requiring the virtual-spatial completions of Summers’ virtual volume, depth, and coordinate plane. But it is noteworthy that all these operations are best imagined by way of later axonometric or perspectival projections (i.e., Figs. 220-22) that an Egyptian scribe-draftsman could not have easily generated; according to Summers’ world art history of the constitution of “three dimensional coordinate space,” they were not fully emergent noetically in his thought-world even if they were immanent in the long-term development of human making.¹³ And because the virtual coordinate plane seems to be at least in part a production of virtual depth, it is hard to say without some tautology that virtual depth is a production of the virtual coordinate plane. This teleology and tautology is not fatal to Summers’ account, for it identifies an immeasurably long replicatory series stretching from the earliest prehistory to the early modern period and beyond. We can fairly ask, however, whether makers at any moment in this history could have produced constructions that Summers can best describe by using metaoptical devices.

It might be that the emergent virtualities of an “Egyptian” planarity should not be identified historically in the procedures of ancient Egyptian artists.

¹³ I say the Egyptian artisan could not have “easily” generated the procedures in question because the required inferences and interpretations – the visual and graphic operations – seem to me to be immense ones. Still, the possibility remains – though Summers does not seize on it in these terms – that practical procedures in Egyptian making could have suggested them: in gridding *all five sides* of a quarried block prepared with guide-drawings in order to cut down to a free-standing sculpted volume, the sculptor could as it were “see” the intersection and interaction at issue here at any angle between the top and any two sides. Even though the pictures on sides and top would not be joined up, the grid network permitted unification as the guide-pictures were turned into “reliefs” (cf. Fig. 225) on their way toward the making of the sculpture. Transferring this awareness of the mutually constitutive relation – even identity – of virtual depth and virtual coordinate plane from sculpture to painting and true relief, impossible to be seen “from the side” in the case of painting and not truly devolved from and “as a block” in the case of relief, would undoubtedly have been a tricky matter. But the gridded block would at least have provided a practical instantiation of the “three-dimensional coordinate space” that emerged as a nomothetic entity in the early modern Western world.

Summers himself moves rapidly from canonical Egyptian to classical Greek sculptural procedures (e.g., pp. 447-50) in an effort to describe the noetic continuity between Egyptian and Greek image making. Juxtaposing the supposed virtual-spatial depth of Egyptian (low) reliefs, on the one hand, and the actual real-spatial depth of Greek (high) reliefs, on the other hand, he seems to say that the Egyptian artifacts had been virtualized in terms refined by the Greek artists and later generalized in modern perspective and its metaoptical reification. But the considerations I have already advanced suggest that an immanent virtuality in Egyptian art only emerged historically in Greek art: it was the Greeks who produced “Egyptian” virtuality to its full notional realization. Again, Summers’ world art history does not really require anything more than this. But it is not quite right to say, as Summers does, that the virtuality of Greek relief-sculpture – he uses the example of the depiction of the Panathenaic procession on the frieze of the Parthenon – “does not differ in principle from the Egyptian” examples of painting and relief (p. 449). To be sure, the Parthenon frieze used “Egyptian” planar techniques in “the multiplication of shapes into virtual depth along a virtual co-ordinate plane according to divisions parallel to the plane of the format itself” (pp. 448-49). But it *also* displays many rotations of the figures – positioned *in* the surface-paralleling planes – to face an implied series of stop- and standpoints that have been sequenced for an observer located in the real space before (and in this case well below) the laterally extended plane of the relief itself. This organization of stops sets up a continuous zippering of *non*-Egyptian off-axial or on-the-bias constructions of each figure (or figure group) quite different from the continuous zippering of putatively axial address constructed by Egyptian depictions in their real-spatial contexts. Put another way, the standpoint assumed and constructed in Greek relief sculpture is not quite the standpoint of direct presentation assumed and constructed in Egypt.

In turn this raises the question *why* Greek sculptors were able to refine the virtuality immanent – if only partly emergent – in Egyptian planarity. How did the real-spatial order of their buildings and associated images motivate a shift from axis to bias as the sightlining – the relation between standpoints and

monumental alignments – accepted as the architectonic condition of pictorial construction? Classical archaeology has usually recounted this history in terms of depicted ponderation – of the emergence of *contrapposto* – in free-standing Classical Greek sculpture. But that term is not so much an explanation as a mere description of the phenomenon in question.

Contrapposto might be regarded as a noetic synthesis of the several pictures of a single figure drawn on the front and sides of an unworked block of stone – each picture might well have been constructed for direct axial viewing in the “Egyptian” manner – in order to carve it out volumetrically: in *contrapposto*, it is as if the Greek sculptor carved “front” and “side” views *in one* and *at once*. To accomplish this, he might not have cut down into the block at each of its four upright *faces* – as Egyptian sculptors had done. Rather he might have cut into the block at each of its four upright *angles*. (Of course, downcutting itself is indifferent to the direction *outside* the block from which it is launched *into* the block; it is the noetic, architectonic, and cultural context that constitutes privileged images supposedly correlated with privileged directions of sculptural attack. In practice, downcutting really must be launched from all directions – whether or not one proceeds in principle from a particular direction or at a particular face or angle of the unworked block regarded axially or on a bias. Perhaps Greek sculptors simply embraced this practical necessity. By contrast, Egyptian sculptors had tried to resist and refute it; they were determined to produce an extra-mundane image unattached to particular circumstances and agents of manufacture.) In this Greek revision of “Egyptian” procedure (strictly speaking it is a rotation), what can be seen at the angle was now approached axially – namely, the spreading (to the right and left of this line of address) of the “frontal” and “profile” projections of the figure *as they would be seen on the bias* in the perspective at the angle. These on-the-bias images (two of them were synthesized in axial address at each of the four angles) were reproduced in the downcutting as such – namely, as “foreshortenings,” displacements of the fully frontal and fully profile views on the faces of the block. Foreshortening realized volumetrically creates *contrapposto*. By the same

token, what could still be seen on the faces of the block – fully planar “frontal” and “profile” images of the projected figure – was not itself reproduced in the downcutting as it would have been in Egyptian sculpture. It is noteworthy, however, that the Greek sculptors seemingly had arrayed the proper *proportions* of the figure in the planar images on the *faces* on the block – probably because they had deployed an “Egyptian” proportional canon. (To be sure, Classical Greek sculptors did not deploy the particular proportional *modules* of canonical Egyptian convention, despite the replication of these measures in certain works of Archaic Greek sculpture; likely they knew nothing about the symbolic significance of the modules in Egypt. But they maintained the “Egyptian” conception of proportions as ratio on the plane – and the plane persisted noetically in the primary views of the projected figure presented on the faces of the block.) The principal technical problem confronting Greek sculpture, then, was the reconciliation of the proportions of the figure with its ponderation: the proper proportions, an expression of ratios in the plane, had to be virtualized in the figure despite its on-the-bias displacement of their planar visibility.

We can, I think, sum the crucial noetic difference between Egyptian and Greek sculpture in these terms. In Egyptian art, the principal sightline of construction was already partly on the bias in the *horizontal* angle of vision: in works such as the reliefs of Hesire and to some extent in paintings like those produced for the tomb of Khnumhotep, the virtual coordinate plane was partly emergent especially when one looked “down on” it. In Greek sculpture, the principal sightline was constructed on-the-bias in the *vertical* angle of vision as well: in cutting in axially from the angles of the block – as it were looking at the projected frontalized figure always “from the side” – one produced *contrapposto* .

Again, however, these considerations describe the noetic phenomenon and its visual-spatial results without explaining them historically. Elements of an historical account might include the intriguing fact that Archaic and Early Classical Greek free-standing sculptures were sometimes intended – as the bases of the statues show – to be approached off-axially by the observer. Put the other way around, statues were sometimes installed to be on-the-bias relative to an

axial line of approach and address organized architectonically.¹⁴ Moreover, Greek architectural reliefs – usually a high relief suitable for observation from a considerable distance – were ordinarily positioned quite high in a building relative to an observer’s real-spatial locations, whether these were encouraged to be moving or assumed to be stationary. (By contrast, even the largest Egyptian low-relief depictions on walls, pylons, or columns were stacked in registers above a groundline constructed at or below the observer’s direct axial line of sight at real-spatial eye level.) When Greek builders placed architectural reliefs high up in the vertical angle of vision, they encouraged explicit awareness that the depictions simply cannot be seen at any point at which the observer’s line of sight might be *perpendicular* to the plane of relief – let alone with the observer’s line of sight notionally perpendicular to *each and every* point on its surface. “Egyptian” planarity, then, was more or less impossible; *Geradansichtigkeit* had been foreclosed in the real-spatial architectonic situation of Greek sculpture.

At the same time, Greek architecture tended to organize sets of particular stop-points for observation – including observation of its architectural sculpture. At the Parthenon, an observer standing outside the temple would find that the columns of the peristyle interrupted continuous inspection of the frieze placed high on the walls behind them. In moving around – or avoiding – the columns, the observer was encouraged to move from one discrete intercolumnar standpoint to another. (Of course, the observer might stand on the stylobate right *between* the columns. From this vantage one can secure an uninterrupted view of an entire wall-length of the frieze. But because the frieze – seen at this vantage – sits extremely high in the vertical angle of vision, the observer would likely move from one intercolumnar station to each of the others in order to inspect its full extent.) At each of these station points, the observer can gaze (off-axially or on the bias) to the right and to the left – visually “sweeping” the

¹⁴ See, for example, Anthony E. Raubitschek, *Dedications from the Athenian Akropolis: A Catalogue of the Inscriptions of the Sixth and Fifth Centuries B.C.* (Cambridge, MA, 1949), 168-69, no. 150 – the base of a “bronze statue set on the base in such a way that the spectator who stood in front of the base saw the statue in three-quarter profile. This may be explained as an early attempt to break the law of frontality . . .”

segment of frieze visible from that place. In some cases figures or groups of figures were composed in the frieze specifically to address such stop-points – sometimes involving pseudo-axial address but also recognizing on-the-bias orientations of observation.¹⁵ Indeed, Greek architecture was not ordered exclusively – as Egyptian building had been – for axial approaches to its regular geometries in plane or solid construction. It included many well-marked on-the-bias approaches. To stick with our example, when an observer first arrived on the plateau of the Acropolis he or she would see the Parthenon from its northwest angle rather than axially face its northern or western facades – even though further approach toward the building constructed those orientations too. (Initial entrance on the plateau of the Acropolis at the time the Parthenon was built focused visually, though not on direct axis, on the colossal free-standing statue of Athena Promakhos – a static and frontalized image.) In turn, we might

¹⁵ It has been suggested that the central portion of the east frieze – the obscure scene of the peplos ceremony, generally agreed to be the culmination of the entire narrative of the frieze – was framed carefully between the fourth and fifth columns of the east peristyle (see the discussion and an illuminating diagram in Jenifer Neils, *The Parthenon Frieze* [Cambridge, 2001], 69-70 and Fig. 54). To be sure, in the east frieze this seems to be the only “self-contained scene,” as Neils calls it, that was explicitly framed for *on-axis* approach and direct address (despite the high vertical angle of vision) from one particular intercolumnar standpoint. As Richard Stillwell has shown, other segments of the narrative require *on-the-bias* observation from several intercolumnar standpoints in a “zone or belt of observation, a few feet wide, that runs parallel to the four sides of the building about thirty feet away from the stylobate.” As Stillwell describes the situation, the composition of the frieze is “adapted to a spectator moving parallel to the façade [in this zone of observation] and looking up at the frieze in a diagonally forward direction”; “except for the end panels, the frieze was intended to be seen as one would move across the face of the building while one looks up diagonally” (“The Panathenaic Frieze: Optical Relations,” *Hesperia* 38 [1969], 235, 237). (In addition to the “direct presentation” of the peplos ceremony on the east frieze noted by Neils, Stillwell identifies “a view directly facing the frieze [and giving] a closed composition” at two station points on the west frieze – opposite the intercolumnar spaces between each of the second pair of columns on the north and south [ibid., 236].) Either way, however, the builders and sculptors recognized the constitution of intercolumnar standpoints in relation to the frieze: “the rhythm of the figures was calculated with an episodic effect in mind and the spacing adjusted to the apparent visual spaces between columns” (ibid., 237). In this analysis is correct, observation of the frieze threaded direct and on-the-bias sightlinings – and figure groups were composed or “framed” for both kinds of beholding. Needless to say, as Robin Osborne has pointed out, this construction enabled multiple – and perhaps counterthrusting – kinds of interpretations by observers (“The Viewing and Obscuring of the Parthenon Frieze,” *Journal of Hellenic Studies* 107 [1987], 98-105). Jeffrey M. Hurwit points out that we could go even further: “typical visitors to the Acropolis would have had only an obscured, fragmented, and thus discontinuous experience of the continuous frieze” (*The Athenian Acropolis: History, Mythology, and Archaeology from the Neolithic Era to the Present* [Cambridge, 1999], 181).

suppose that the construction of images in free-standing and architectural sculptures responded to on-the-bias sightlining by constituting an off-axis virtualization of the sculpted figure's address to the world from which it would be observed – namely, its ponderation or *contrapposto*. We can see this quite clearly in the segment of the east frieze – it shows two “marshalls” and six women, possibly basket-carriers or *kanephoroi* – cited by Summers (Fig. 226); in this segment of the frieze, as he puts it, “relief space simply but surely pushes planar presentation in the direction of the optical” (p. 450). The figures turn in the same world in which the observer turns. Thus they remained in continuous coordination with the observer precisely by shaking off the *Geradansichtigkeit* that had created such continuous coordination in the Egyptian architectonic context.

Throughout this section, I have urged that planarity and virtuality were noetically immanent in one another. Indeed, at times they actually emerged in one another in a real-spatial construction of images. I want to endorse the side of Summers' account that says just this: even though Summers takes virtuality to be the “opposite” of planarity, he provides a perspicuous analysis of its development as the *production* of planarity. The virtuality achieved in Classical Greek architectural sculpture can be seen as a special refinement of the virtual volume, virtual depth, and virtual coordinate plane that had been achieved in canonical Egyptian art – a rotation immanent in *Geradansichtigkeit* from its beginning, or at its noetic origin, simply because its putatively pure axial planarity must always be strictly notional. Even the most extremely frontalized Egyptian images to some extent must actually be approached and observed off-axially or on the bias. Thus it is no surprise – though it presents a conundrum for the received account of Egyptian image making – that the reliefs of Hesire virtualize the world of the depicted figure in part because the observer notices the virtual coordinate plane; its *notional* immanence in all planar relief here became an emergent spatial and optical effect. At the same time, however, this effect is unstable and uncomfortable; Egyptian artists realized it fitfully, and probably nondeliberately, and did not refine it systematically. In any finished and correctly constructed picture, the emergence of the virtual coordinate plane

contested optically with planarity – with conventional commitments to the nonocclusion of well-bounded volume shapes, to isocephaly and register composition, and to proportions constructed in modules arrayed on the plane.

Indeed, the particular virtuality to be found in Egyptian depiction consists precisely in the perspicuous emergence of *volume-shape visible in the plane* as distinct from *object-space constituted in depth*. Summers goes a step too far, then, in finding an immanent *spatial* virtuality to be fully and widely emergent in canonical Egyptian pictures. In particular, the notion that the virtual coordinate plane was notionally extended indefinitely into depth (Fig. 220) – and that it could emerge in the image as multiple parallel planes layered one behind the next at right angles to the axis of direct presentation (Fig. 223) – imports a modern space into the situation *avant la lettre*. It imposes metaopticality – the emergent three-dimensional grid of coordinate space – where we should simply find certain immanent virtual involutions of planarity. This is not to say that these involutions – they can both preserve and perturb the standpoint of direct presentation in Egyptian art and its construction of planar images – cannot tend toward three-dimensional “spatial” rationalization and metaoptical reification. It is only to say that they were not projected and measured with the essentially metaoptical exactitude imposed on them in Summers’ analysis and diagrams. Put another way, virtuality in *Geradansichtigkeit* emerged in an immanent fold, an internal displacement and resistance, in planarity – namely, in its own notional incompleteness *as* planarity. Far from being abstracted to its notional expression, this virtuality emerged and persisted as uncertain graphic struggle and unstable optical suggestion – virtuality as planarity falling short of its own notional.

From Virtuality to Metaopticality

In his Fig. 314, Summers represents what he calls the metaoptical notion of a virtual object (in this case a sphere) as a modern Western naturalistic image maker might depict it: a “volume in light” and the “point of view” from which it is virtually observed have been mutually coordinated in an “infinitely extendable

three-dimensional grid, relative to which any form or motion is describable" (p. 561). As Summers describes it, metaopticality resembles both Cartesian coordinate space (i.e., the three-dimensional rectangular Cartesian system) and Newtonian absolute space. Indeed, Summers often uses Cartesian and Newtonian terms – such as “coordinate space” and, less frequently, “absolute space” – to describe metaopticality. He trades on this relation in his broader remarks about the pervasive technological and cultural consequences of the rise of metaopticality – a polemic on the fateful disjunction between a “world art history” of places and centers and “the rise of Western modernism” in which all places and centers have been homogenized.

No one would deny that Cartesian and Newtonian conceptions of spacetime contributed essential frameworks to scientific, technological, and industrial inventions of all kinds from the mid-seventeenth century to the present day. To be sure, these frameworks were not always accepted by modern thinkers. Newton’s absolute space was proposed in part as a fundamental criticism of Cartesian spacetime. And quantum mechanics in the twentieth century has usually been taken to have superseded the Newtonian framework – at least for purposes of understanding phenomena that metaoptical observation might also be able to approach (as in its envisionings of chemical bonding or the structure of the atom). In order to advance his widest argument, however, Summers must downplay the interaction between twentieth-century modernism and post-Newtonian (i.e., post-metaoptical) conceptions of spacetime. Overall he insists on the persisting global influence of Cartesian or “three-dimensional coordinate space.” For him, metaopticality – despite its relativization in post-Newtonian science – continues to thrive in the micro- and telescopic visualizations procured (for example) in late-modern photography, radiography, and spectrography.

Nonetheless, metaopticality can and should be distinguished from Cartesian and Newtonian spaces. Metaopticality in Summers’ world art history is best characterized as the *optical-geometric virtual-spatial notional*ity through which both Cartesian and Newtonian mathematical conceptions of spacetime were

themselves derived.¹⁶ As such, metaopticality might be taken to be a specifically *visual-cultural* phenomenon – a procedure in or a possibility for the construction of certain kinds of virtualizing depictions. If it achieved world-historical power, as Summers claims, it was because it was adopted, interpreted, and refined by Cartesian, Newtonian, and other modern theoretical paradigms. But at its noetic and historical root it is not itself the same thing as those paradigms. Indeed, as Summers shows, there is an important sense in which metaopticality was fully immanent in pre-modern and non-Western conditions of image planarity. (As we have seen, the “virtual coordinate plane” was noetically immanent – and optically part-emergent – in “Egyptian” planarity; thus it is a vital – Summers presents it as the primal – platform for the constitution of coordinate space.) And equally important for my purposes, metaopticality, like the virtuality in planarity considered in the preceding section, probably found only a part-emergence in early modern pictorial virtuality – image-space that was *not yet* (and perhaps was *never fully*) unified and homogenized and was *not yet* (and perhaps was *never fully*) infinitized or rendered entirely measurable in pure metaopticality. If the full reification of metaopticality required the Cartesian (and later the Newtonian) mathematical inventions, its specifically imagistic virtualization was an incomplete and unstable affair.

¹⁶ Summers does not mount a direct argument that optical-geometric virtual-spatial notionality constituted the noetic basis of the “three-dimensional coordinate space” or “point space” set forth by Descartes in 1637 (though notoriously none of the thirty-two geometric drawings in *La géométrie* deploys the coordinate axes) and developed by Leibniz in the 1690s. In Descartes’ formulation, coordinate space is a marriage between geometry and algebra: a specifically algebraic geometry (i.e., analytic geometry) permits Cartesian description of positions and movements in a coordinate space in the crucial sense – invoked by Summers – in which “any form or motion is describable” as a function in what later came to be called the “real space” mapped by the coordinate axes. In certain accounts of the matter, Descartes’ arithmetization of geometry motivated his construction of the notional axes of the coordinate space. In this sense the modern reification of metaopticality – its mathematization in Cartesian and later in Newtonian and other terms – was not simply a matter of an “abstraction to the notional” in the domain of virtual-image (optical-geometric) constructions. Still, as Eves points out, Cartesian “coordinates were made for geometry and not geometry for coordinates,” and the legend of the origin of Descartes’ invention (“he noticed that the path of a fly [crawling in a corner of his room] could be described if one knew a relation connecting the fly’s distances from the two adjacent walls”) perhaps supports Summers’ approach (Howard Eves, *An Introduction to the History of Mathematics*, rev. ed. [New York, 1964], 282-90, quotations from pp. 288, 287; see also Florian Cajori, *A History of Mathematics*, 5th ed. [New York, 1991], 173-77).

Summers shows us, I think, exactly why this should be so – somewhat against the drift of his widest argument about the world-historical domination of metaopticality. In refining the virtual spatiality of perspectival images, metaoptical homogenization and infinitization had to deploy a geometry predicated on the visual angle – a condition of visual perception and a construction in depiction that nonetheless must remain “fundamentally incompatible,” as Summers himself insists, with the notional three-dimensional coordinate grid of Cartesian space. (Indeed, representation organized in terms of the visual angle is incompatible with any *two-dimensional* grid-plan representation – suggesting a three-dimensional coordinate spatialization – of a virtual space.) To my mind, Summers’ brilliant account of virtual spatializations in fifteenth-century Italian perspectival image making reveals this history to us: configured in a noetic “incompatibility” between visual angle and modular grids in two and three dimensions, the complex spaces of Renaissance pictures (and their many replications in the tradition of Western naturalism) can confound their pure metaoptical generalization at the same time as they can preserve aspects of their planar constitution. Like the virtual space realized in ancient Egyptian planarity, then, the virtual space of pictorial perspective is quite particular to it. Moreover, it has no inevitable and single metaoptical teleology – despite the later Cartesian, Newtonian, and other reifications. In fact, some of its most striking and potent effects seem to be counter-metaoptical: they allowed the Renaissance image makers to picture a virtual world in which substantial places, paths, and centers coexist with – they are certainly not suppressed or homogenized by – an implied general spatiality. In this sense Summers really offers the *prehistory* of modern metaopticality – of pictorial perspective – before its Cartesian reification and colonial-imperial globalization.¹⁷ At the same time he offers a powerful analysis of modern

¹⁷ As suggested in the previous footnote, the history of this immensely influential reification would require a history of mathematical and other theoretical inventions that do not depend specifically on the virtuality – notional or otherwise – of images. But Summers does not directly address this history in his account of “world art history and the rise of Western modernism” as metaopticality. Metaopticality in the form of Cartesian three-dimensional coordinate space is

resources for – and modern interests in – *resisting* or as it were *virtually localizing* the power of immanent metaoptical reifications developed in part from pictorial perspective. To be sure, he wants to locate this resistance in a late-modern avant-garde critique of Western metaoptical modernism – a view that might overestimate the critical power of avant-garde experiments whose thought-worlds could not but be substantially Cartesian. But the resistance of the virtual (or what I would call the pictorial) would seem to be palpably emergent in the prehistory of metaopticality in early modern perspectival depiction as Summers describes it.

If this is what Summers' account shows, it is not, however, what he always says or wants to say about it. As in the case of the emergence of "Greek" virtuality in "Egyptian" planarity discussed in the previous section, Summers tends to project the Cartesian metaoptical reification back into a late medieval and early Renaissance prehistory that he sees largely as a continuously refined abstraction to the foreordained notionality of three-dimensional coordinate space. (In part the abstraction seems foreordained because all along three-dimensional coordinate space had been immanent – in the virtual coordinate plane – in very ancient traditions of planarity of image making.) As in his account of pre-modern image making, in which planarity tends to be "abstracted" to virtuality, in his account of modern image making virtuality tends to be "abstracted" to metaopticality. In both cases, we should note, the visual angle – what we might call the fact of standpoint – plays a changing and to some extent a troublesome role in Summers' analysis. In planarity, a partial abstraction to spatial virtuality was suggested by the visual angle; it allowed the emergence of the virtual coordinate plane. In the more fully-realized spatial virtuality of early modern image making, however, the visual angle actually *constrains* the full abstraction to metaopticality – enforcing a merely partial consolidation of an "infinitely extendable" three-dimensional coordinate space. Either way, an "abstraction to the notionality" of pure virtuality (in the case of

wholly assimilated to the notional abstraction of the imagistic spatial virtuality secured in perspectival depiction.

planar image making) and pure metaopticality (in the case of virtual image making) has not been completed and probably cannot be completed in the real space of images as such.

The Visual Angle and Three-Dimensional Coordinate Space in Renaissance Pictorial Virtuality

Summers draws attention to the congruence between Alhazen's theory of vision, developed at the beginning of the eleventh century in Egypt, and the perspectival pictorial constructions of Filippo Brunelleschi, produced at the beginning of the fifteenth century in Italy. As Summers puts it, Alhazen "provided the principles by which anything visible – the world, but also the heavens and the universe taken together – might be described geometrically as a set of points in relation to the surfaces of the organ of sight" (p. 511, and see Figs. 284, 285). The great Arab philosopher has usually been cited because he replaced the long-standing Aristotelian theory of extromissive vision with the doctrine of intromission – of light rays entering the organs of sight. As both Vitruvius and Alberti recognized, however, the directionality of light – extromissive or intromissive – is irrelevant to an architect or painter. By extension it is irrelevant in any construction of imagistic virtuality – of the phenomenal appearance of a real world in its graphic replication. (Ancient painters deploying the extromissive theory of vision created spatial virtuality on a par with the spatial virtuality constructed by modern painters deploying the intromissive theory. The difference between the ancient and modern virtualities, if Summers is correct, lies largely in the fact that the ancients did not use Alhazen's visual angle – and thus did not construct "perspective" standpoints – while the moderns, if Summers is correct, routinely produced Alhazian images. Still, if the visual angle – as a formal notion – derived historically from intromissive optics, phenomenally and in optical-graphic replication it is independent. As we have seen, it was fully immanent – though not fully emergent and never theorized by a pharaonic Alhazen – in ancient Egyptian planarity.) What counts for the

painter in the construction of a virtuality is the *geometry of the visual angle* with its *apex in the center of the (intromissive) eye* as Alhazen imagined it – as admitting light rays perpendicular to the tangents of any point on the surface of the organ. Alhazen’s theory was widely distributed in Europe in the later Middle Ages, and Summers regards it as the noetic – and actual historical – origin of the “rise of Western modernism,” and certainly as the crucial platform for the development of perspectival virtuality in depiction.

To be sure, the circumstantial connections between Alhazen’s or his followers’ texts and Brunelleschi’s practices are somewhat tenuous. (In 1424, probably after he had made his practical demonstrations of pictorial perspective, Brunelleschi is said to have received – and presumably to have read – an optical treatise by Blasius of Parma, one of Alhazen’s Italian followers.¹⁸ If Summers is right, Alberti [pp. 519-23] and Leonardo [pp. 511-12, and Fig. 286] formalized their own versions of Alhazen’s theory specifically for painters and picture making.¹⁹ But their contributions were made well after Brunelleschi’s demonstrations – giving it what has been called a “theoretical expression.”²⁰ And this is precisely the problem: without the “theory,” or what Summers would call a development or abstraction to the notional, how did Brunelleschi realize Alhazen’s doctrine?) Nevertheless, Summers makes a good *analytic* case for an historical affiliation. In

¹⁸ See Graziella Federici-Vescovini, “Contributo per la storia della fortuna di Alhazen in Italia,” *Rinascimento* (ser. 2) 5 (1965), 17-49; the direct connection to Brunelleschi has been advocated by Alessandro Parronchi, *Studi su la dolce prospettiva* (Milan, 1964), 240. Another Italian follower of Alhazen, Biagio Pelacani da Parma, taught at the Studio Fiorentina in 1388; see Graziella Federici-Vescovini, “Le questioni di ‘perspectiva’ di Biagio Pelacani da Parma,” *Rinascimento* (ser. 2) 1 (1961), 163-243, and Vescovini, ed., *Le Questiones de Anima di Biagio Pelacani da Parma* (Florence, 1974). Robert Klein has suggested a connection to Brunelleschi (*Form and Meaning: Essays on the Renaissance and Modern Art*, trans. Henri Zerner [Princeton, 1981], 102-4), but despite the importance of Pelacani’s theories in shaping Renaissance notions of picture making it cannot be confirmed that Brunelleschi had direct access to them. In *The Judgment of Sense: Renaissance Naturalism and the Rise of Aesthetics* (Cambridge, 1987), 153-71 (and esp. 164-67), Summers does not depend on a direct historical link between Alhazen’s optics and Brunelleschi; his account in *Real Spaces*, however, seems to me to require it.

¹⁹ Although this case has been made before (see, e.g., David C. Lindberg, *Theories of Vision from Al-Kindi to Kepler* (Chicago, 1976), esp. 152, and Lindberg, “Alhazen’s Theory of Vision and Its Reception in the West,” *Isis* 58 (1987), 321-41; Claire J. Farago, *Leonardo da Vinci’s ‘Paragone’: A Critical Interpretation with a New Edition of the Text in the ‘Codex Urbinas’* (Leiden, 1992), 105-8), Summers provides the clearest presentation that I have been able to find.

²⁰ Lindberg, *Theories of Vision*, 149.

particular, in a highly original section of his book he suggests that Brunelleschi's mysterious "peep-hole" demonstration of his painting of the Baptistery in Florence obeyed Alhazen's doctrine. As Summers puts it, Brunelleschi's painted (and partly reflective) panel and the plane mirror in which it was reflected were arrayed as "facing surfaces in light" such that "every point on one is visible from every point on the other, and the eye may be placed at one of these points" (p. 516). In this sense, Brunelleschi's two opposed surfaces, the painted panel and the facing mirror, "were meant to show the underlying principles according to which the [virtual-spatial] unification" of the pictorial representation of the Baptistery displayed on the panel had been achieved.²¹ In other words, Summers claims, Alhazen's visual angle had been used to make the painting – in practice *before* its demonstration in the panel-and-mirror device. Assuming this possibility, Summers presents his own reconstruction of the emergent linear-perspective picture in which Brunelleschi portrayed the facade of the Baptistery

²¹ Brunelleschi's demonstration device fixed a *single* visual angle – or better a visual cone with a strong and stable "centric ray" – as a putative unification of two identically standpointed vertical and horizontal angles of vision. Alhazen's theory, however, imagined an indefinitely large number of "views" cumulatively amounting to – and providing to the observer – a true perception of the object. The movement of the eye enables this overall unification; as Jack M. Greenstein has pointed out, "by sweeping the centric ray over an object, the eye sends to the mind a series of verified or veridical impressions" ("On Alberti's Sign: Vision and Composition in Quattrocento Painting," *The Art Bulletin* 79 [1997], 686). (As Greenstein notes, there are problems in this account: "If every point radiates light and color in all directions, rays from different points can reach the eye at the same place. How then does visual sense sort out which ray corresponds to which point?" [ibid., 689]. The "sweeping" of the eye enables vision to cope with another difficulty in Alhazen's optics: because it is only the central ray that can "pass into the optic nerve without any refraction whatsoever," leading to obvious variations in the visual clarity of things despite the fact that rays fall on objects from every point on the eye, a sweep can carry "the axis of the vanishing point over the visible body so that each of its points is perceived through this central ray" [Lindberg, *ibid.*, 85].) Brunelleschi's demonstration, then, effected a leap between the visual-spatial experience that it actually provided and the "underlying principles" of human visuality that it suggested. In particular, the observer needed to grasp that a correctly scaled and diminished view of the same object could be obtained from other implied angles of vision, or standpoints, that the projection did not itself geometrically construct – and that all such views would remain consistent with the view that has actually been projected insofar as all of them could be geometrically reconciled. (In turn such reconciliation, as Summers might say, must be – or would require – a "metaoptical three-dimensional coordinate space.") It is certainly plausible that Quattrocento painting ruled by perspective constructed this impression for the observer. But it is not obvious that Brunelleschi's device fully enabled it. Although the peephole forced the observer to grasp the specificity of the visual angle at that particular standpoint, for that very reason it did not permit the "sweeping" in which such *all* such standpointed visual angles would observe the same world.

from a standpoint inside the main portal of the Cathedral. Here, although he largely follows Richard Krautheimer's analysis of Brunelleschi's practical procedures, he injects his own distinctive emphasis on the determining role of Alhazen's doctrine of the visual angle. In this proposal the entire world-historical problematic of virtuality and metaopticality and their relation to the cultural grounds of real spatiality can be found *in nuce*. Therefore it is worth dwelling on it in closer detail.

If Brunelleschi's device demonstrated a theory in which "the eye may be placed at [any] one of the points" on a surface and from it see any other point on facing surfaces, the painting itself constructed – or selected – *one* such point as its standpoint. This standpoint is a place that cannot be shown in the picture itself; it is the place from which a picture of a world facing it has been projected. But it is also a place that the device (and probably many other practical and formal developments of the theory) proposes and shows to be seeable – and thus to be equally picturable – from any *other* point in its world. In an Alhazian optic, the real space of the standpoint becomes a virtual spatial location notionally equivalent to all other virtual spatial locations in an overall matrix. To suggest this in the device, the painting had to have been configured using the same visual angle and its centering that was manifested in the device. The identity of the standpoint of the painter in making the painting and the viewpoint of the observer looking into the device was proved by peering into the device *in situ* at the original standpoint in real space; by removing the mirror, the observer could replace the illusion of the mirror-reflected painting of the Baptistery with the actual facing elevation of the Baptistery itself. In turn, and more important in Summers' account, this equivalencing provided an optical-spatial ground for the fully general equivalence that the theory proposed: the relation manifested in the device will hold at any "point" of observation. But the demonstration also required the painter and the observer of the painting in the device actually to occupy the same real standpoint. In the demonstration of the painting, then, real spatiality, pictorial virtuality, and emergent (Alhazian) metaopticality were seemingly at one – mutually immanent and jointly emergent in one another. For

this very reason, we have no special reason to organize the optical recognitions and notional realizations made possible in the configuration in any particular teleological direction. If the device suggested an Alhazian general equivalence (“every point on one [surface] is visible from every point on the other [surface], and the eye may be placed at one of these points”), at the same time and in the same construction it affirmed the particularity – even the uniqueness – of the point of projection itself and what can be seen from there and from there only. In the experience of Brunelleschi’s painting as demonstrated in his device, a unique visual angle and its correlated standpoint coexisted phenomenally with the suggestion of the homogeneous visibility of “space” in Alhazian terms. But in theoretical terms, as I have already noted, these realizations – at some threshold of their “abstraction to the notional” – become “fundamentally incompatible.” Although Brunelleschi’s device found an ingenious way to sublimate this disjunction, in general perspectival painting cannot avoid it: in one-point linear perspective, a particular visual angle and a homogeneous or “infinitely extendable” general space cannot be fully unified.

In configuring a seemingly three-dimensional virtual spatiality, Brunelleschi must have encountered many optical and graphic challenges. Rivaling the later mathematical (and specifically *meta*-optical) inventions of Descartes or Newton, he must have made several remarkable noetic-optical leaps even if – and perhaps precisely because – he deployed Alhazen’s visual angle in making his painting. We can briefly review his procedure. First of all, he had to have made a plan and a front elevation of the Baptistery *according to the same scale*. Needless to say, the front and all side elevations of the octagonal Baptistery are strikingly alike in their gross conformation. Perhaps this suggested the idea of making a picture effecting an optical-graphic and noetic “leap” from one (front or side) elevation to (all) others – all virtually represented (if not actually all visible) in the same projection. (Phenomenally the building should look like itself “from all points of view” at the “one point of view” from which we actually observe it.) Indeed, depending on one’s distance from it one often sees the front elevation of the Baptistery “in perspective” already: an observer standing in the piazza or in the

portal of the Cathedral and directly facing the west portal can also see the entire breadth of two facades of the building receding to the right and left. (This phenomenon becomes less and less visible as one retreats from the Baptistery into the Cathedral along the main axis between the font of the Baptistery and the high altar of the Cathedral.) Thus it is possible to make a “perspective” picture of the Baptistery simply by transcribing the front – or indeed any – elevation of the building. But Brunelleschi went on to make a “perspective” that manifested a three-dimensional spatiality – the Alhazian optical context of the (unified) elevation(s) – as well as a uniquely standpointed angle of vision; as I have put it elsewhere, in his demonstration of perspective he put perspective in perspective.²² In some sense he must have been interested in the specifically *volumetric* challenge: the visual angle provided a principle in terms of which the strictly phenomenal recession of the building in visual perception might become exactly measurable in its graphic replication – at least to the degree that the image was coordinated with the standpoint from which an observed recession had been graphically transcribed. But thorough-going virtual volumetricity would seem to be as much the end-product of metaoptical spatiality as its noetic basis. We need to know why *volumetric spatiality* arose in modern image making in the first place. General cultural practices and techniques of volume mensuration – they have been best described by Michael Baxandall – might have suggested certain elements of the painters’ construction of virtual volumetricity. But they could have not determined. Volumes can be measured in the real world by abandoning one visual angle for many others – for example, by moving around a solid object to measure the height and width of all sides. Volumes must be *pictured* as virtually measurable, however, by adhering rigorously to a single visual angle.²³

²² Whitney Davis, “Virtually Straight [Review of Hubert Damisch, *The Origin of Perspective*],” *Art History* 19 (1996), 434-44.

²³ In his treatise on this issue in early Renaissance mercantile and pictorial cultures, Baxandall somewhat elided the terms of the problem by speaking of a general culture of “judging” the volume of objects in the marketplace and in paintings – as if techniques of mensuration in the extra-pictorial world are essentially equivalent to the fictive possibility of mensuration projected in the perspectival-pictorial world. In the real world, the visual angle might sometimes play a

Once he had produced a plan and a side elevation of the Baptistery, Brunelleschi next had to “superimpose” visual angles, in Summers’ word, on the two drawings. And each of these angles had to be *centered at the same point* outside the plan and elevations themselves—namely, at the place inside the portal of the Cathedral (maybe not marked as such on his plan) where he imagined himself standing (or where he actually did stand when he took certain measurements for his elevation). Then he had to draw the lines in both drawings that connected the *angles between plane surfaces on the building* as well as *all far edges of the building*, on the one hand, and the optic center(s) specified in the drawings on the other hand—whether or not he conceived these lines as representations of light rays perpendicular to tangents on the surface of the eye placed at those centers. Next he had to construct sections through the visual angle *at the same distance from the center in both drawings*.²⁴ In turn he had to transfer these two sections—each marking the points of their intersection with the “perpendiculars” of intromitted light—to a single sheet or panel. (This was the “unification” identified by Erwin Panofsky.) Indeed, he had to transfer the points for the vertical angle of vision *to the side* of the sheet or panel and the points for the horizontal angle of vision *to the baseline*. These side and baseline points then had to be produced as horizontals (for the vertical angle) and verticals (for the horizontal angle) across the full height and breadth of the sheet or panel. And finally, in the trickiest phase of the entire operation, he had to grasp how to *connect up some – but not all – of the points* created at the intersections of these horizontals and verticals (it would have been simply a dense network of variously spaced lines crossing each other at right angles) *such that* the “bare skeleton of the Baptistery [would come] into view” (p. 515) in the drawing.

helpful—and sometimes an obfuscating—role in measuring volume. In depiction it must play an absolute role: there can be no volumetricity without it unless the painter chooses to abandon virtuality altogether (and adopt an “Egyptian” planar configuration of volume).

²⁴ Krautheimer supposed that distance was given as “the point at which [Brunelleschi’s] eye first hit the piazza” in his vertical angle of vision when standing inside the portal of the Cathedral; evidently he hoped that this specification would establish a kind of phenomenal-architectonic or real-spatial grounding for Brunelleschi’s operation. But in his reconstruction of Brunelleschi’s procedure he did not actually obey his own suggestion.

It is easy to see why Brunelleschi would have undertaken the very first of the operations I have described: perhaps he simply wanted to make accurate plans and elevations of the building. But it is considerably less easy to see why he would have pursued the other operations in their proper sequence unless he already knew that he could combine two graphic replications of visual angles in this way in order to picture the building in “three dimensions” – what Panofsky called the “unification” of the two-dimensional plan and the two-dimensional elevation as they had been secured separately – and as if observed from apexes having an identical location at the same standpoint in the real space that he wanted to depict. Arguably he could only discover that such an image could be made after pursuing the sequence of operations that we might think depended on it. What, then, initially determined his order of work? If the Alhazian theory of the visual angle had been notionally organized by him in a metaoptical frame all along, we can, of course, readily explain it – as Summers tries to do. *But supposedly metaopticality is the notional production of perspectival pictorial virtuality.* It cannot be assumed – without tautology – as its noetic basis.

Following Summers’ lead, I have tried to specify the emergent metaopticality in Brunelleschi’s pictorial virtuality as closely as possible. But as in the case of virtuality in Egyptian planarity, and belying Summers’ interpretation, we seem mostly to confront a noetic history of part-emergences. We can put the point in a different way. Many spatial phenomena that Brunelleschi’s procedure presumably allowed him to depict (or at least to locate virtually) could be metrically described and comprehensively interrelated once the virtual-metaoptical construction had been achieved – the choice of center (or standpoint) outside the plan and front elevation, the choice of section (or plane) through the horizontal and vertical visual angles, and the choice of connections between the points of intersection. But these locations and relations were also para-metric, as I would like to put it, in the sense that they had their own grounds and determinations outside the virtual-metaoptical notion itself; indeed, they constituted its parameters. Brunelleschi chose to observe the Baptistery from a

particular spot just inside the main portal of the Cathedral.²⁵ He chose to take his sections of the vertical and horizontal angles of vision (establishing the plane of projection) as transversals through a point somewhere in the plaza – perhaps at or “below” the visible top edge of the stairs in front of the portal (this would have made immediate phenomenal sense), perhaps metrically midway between his standpoint and the facing door of the Baptistry (as Krautheimer thought), or perhaps somewhere else. And he chose to connect the intersection-points that would deliver a pictorial image of the “bare skeleton of the Baptistry” as a solid with facing and receding plane surfaces, even though other choices could have been immanent in the network of intersection-points as such (and might have been replicated in the “planarity” used by a Byzantine or late medieval image maker – or by a Cezanne or a Cubist). The depiction of place and space made possible by the deployment of Alhazen’s visual angle existed in tension with these places of its parameters. In the completion of the perspective, of course, they were enfolded into and interrelated by the emergent virtuality. But they cannot be absolutely reduced to it – at least without a metaoptical reification – because they cannot be fully pictured *within* it even if they can be virtually placed there. The picture cannot *picture* its standpoint, its plane, and its lines and colors. Rather, what it pictures – what it virtualizes – is pictured *from* its standpoint, *on* its plane, and *with* its lines and colors. The parameter-places, then, are the grounds of the projected virtual space. As Summers shows – it is one of his deepest insights – the geometrical-optical logic of the visual angle allows these parameter-places to be identified and coordinated *metaoptically*: metaopticality provides a framework of knowing places (including the standpoints and planes of what has been pictured) that are entirely outside but

²⁵ Although the source tells us that this spot was three braccia inside the portal, this does not yield an absolutely definite location because one might define the depth of the portal itself in slightly different ways. Moreover, there is reason to believe that the virtual standpoint manifested in the demonstration device need not have been the actual spot where Brunelleschi observed certain visual relations crucial to his construction of the painting demonstrated in the device – even though the device, as we have seen, virtualizes a supposed identity between painter’s standpoint in making the painting and viewer’s standpoint in looking into the device at the same place. Unfortunately I cannot go into this complicated issue here and must reserve discussion for another place.

nonetheless absolutely continuous metrically with what has been pictured as spatially placed in any given represented world. This is a kind of endless nesting: in metaopticality, we can picture the place from which a picture has been projected in a way that seems to be continuous spatially with that very place, and we can picture the place from which we can picture the place from which a picture has been projected . . . and so on, indefinitely or endlessly.

Nevertheless, at no point in the deduction can we finally detach the parameter-places determining the outermost (or noetically operative) virtual space – wherever it falls in an indefinite recursion-extension of the virtual world – from their real-spatial grounds. And at every point the virtual space remains tied to these conditions. To *divide* real and virtual space, as Summers does, seems to be to forget the *inherence* of virtual in real space – the very point Summers hopes to affirm. To be sure, the noetic development of metaopticality as an endless nesting of metrically continuous pictorial virtualities (as I would like to put it) seems to take us further and further away from the parameter-places of any *particular* pictorial virtuality – such as Brunelleschi’s standpoint inside the main door of Florence Cathedral. These parameter-places seem increasingly to “disappear” in an increasingly metaopticalized virtuality because they become metrically interrelatable with all other parameter-places determining all other virtualities nested in the emergent whole. And yet modern virtualities – despite their emergent metaopticality – suggest that the parameter-places likewise continue to emerge. Rather than a smooth transcendence to metaoptical notionalities we find a constant push and pull between the extension of the virtual in recursion, in the replicative nesting of its deductions of world, and its return to the located places and parameters of its projection. Against the main drift of his own world-historical narrative, I think, Summers reveals – he gives us the analytic tools to discover – this characteristically modern art history .

Summers’ sophisticated and innovative discussion of “Renaissance painter’s perspective” (pp. 517-26) must be read by all students of this complicated topic. In careful detail, he shows how the point of view mobilized in Brunelleschi’s demonstration – tied palpably to its real-spatial localization *in situ* – could be

brought into the projection by way of “simple virtual constructions” (p. 519). These constructions developed the visual angle in systematic geometric relation to what Summers calls the “optical plane” and its development in the “optical cube” – configurative possibilities of virtuality in planarity that had been long established.²⁶ I am not sure that these “simple virtual constructions” were easy to attain noetically (Summers suggests they were readily achieved in practice [p. 519]). Certainly they were not easy for artists to manage: Ghiberti’s and other artists’ productions present virtual spaces as if they were moving in and out of the metricized space notionally made possible by one-point perspective projection – at least in that domain of the depicted world falling under the visual angle. Moreover, Summers’ discussion of the constructions can be read to show that Alberti’s attempt to formalize them confronted what I described a moment ago as a push-and-pull – a distortion of the virtual space relative to the real-spatial standpoint of its apparent projection (and at which we would ordinarily feel ourselves to have an undistorted point of view if we were actually there). Take, for example, a simple virtual construction (perhaps the very simplest) that configures a “point of view . . . modelled as if on the plane of the format” (p. 518, and see Fig. 290[b]) – that is, as if the projection plane were the surface of the observer’s eye. Here the optical plane – the apparent extension of the virtual coordinate plane as a visible depth of depicted ground – must tend to be “steeply sloping” (p. 521). Pictures constructed in this way encounter an emergent optical problem that bedeviled Khnumhotep’s scribe-painter (supposedly working in terms of the virtual coordinate plane) and confronted the Greco-Roman and late Greek (Byzantine) artists who had consolidated the optical plane (pp. 454-57, and

²⁶ The optical plane and optical cube as Summers describes them can be regarded most simply as developments of the virtual coordinate plane constructed in Egyptian depiction. The optical plane produces the virtual coordinate plane within the depiction; the optical cube produces the implied space in virtual three dimensions. Both constructions, Summers suggests, can be seen to mediate the transition from planarity to metaoptical coordinate space. In particular, the optical cube would seem to present an optical-geometric pictorial virtualization – well in advance of its metaoptical notion – of an environment ordered as “box.” Still, it is worth stressing that both optical plane and optical cube resist the full emergence of virtuality and metaopticality. In particular, the “box” of the optical cube typically realizes the virtual volume of a depicted

Fig. 232): all the pictured objects seem to stack up in tiers before us as if arrayed on a high mound virtualized by the plane. Of course, the visual angle permits the painter to construct this plane – looming up before the observer – in proper scalar diminution relative to the viewpoint. But the construction all too obviously contravenes the real plane it is supposed to realize optically (i.e., the coordinate plane) as “essential [to] understand . . . to be perpendicular to the plane of the format” (p. 455) – to be the ground rather than a mound.

In the famous construction proposed by Alberti, the painter can use the visual angle to rectify this distortion of the intended virtual prospect by situating the viewpoint at a *distance* from the plane of projection – a plane now disjoined from the plane of the format itself. In Alberti’s preferred formula, the height of the viewpoint from the implied coordinate plane gives a module (the height divided by three) used to construct the orthogonals which metrically map the ratios of recession in the optical plane. Implied virtual coordinate plane and actual optical plane, then, can be conceived to be continuous – whether or not they can be *seen* to be continuous in the resulting pictorial configuration. To mitigate residual slope in the optical plane traversed by the orthogonals, the painter can pull the viewpoint further away from the “centric point” (the emergent vanishing point) with which it is coincident or reduce the height of the viewpoint relative to the width of the baseline – or both. (Needless to say we find many permutations in naturalistic perspectival depiction allowed by – or generated in – this push-and-pull.) In so doing, however, a distortion as it were inverse to excessive slope must emerge: presuming the real shape of the format remains constant, the optical plane that flattens itself toward the denoted ground (coextensive with the virtual coordinate plane at right angles to the plane of the format) will define considerably less of the virtual space of the whole image in scalar-metric terms. In the Albertian triangles of metrically mapped virtual space relative to the full rectangle of the optical plane, and assuming a centric point perpendicular to the bisection of the baseline, the Albertian orthogonals can map

building; it does not coherently or systematically present the measurable height, width, and depth of an enclosed spatiality.

exactly half – and only half – of the implied virtual territory. If this is not quite a distortion in the virtual image, it surely counts as an insufficiency in the pictorial method. It too can be corrected. Metrically mapped virtual space in the image can be expanded by producing the transversals to both vertical edges of the projection plane (i.e., the two sides of the plane of the format) beyond the triangle of scaled recession specifically constituted by the converging orthogonals. (This metrically mapped spatial domain will fill up the entire optical plane. The plane might have to be restricted, however, to a fairly narrow segment of the entire implied virtual space and depth of the depicted world faced by the observer at the constructed standpoint precisely in order to avoid the *first* problem I have mentioned – the virtualization of an excessive slope or of a high mound or rack of objects in the world facing the eye.) Going further, one can, of course, divide all four sides of the projection plane in order to project what Summers nicely calls a “tunnel of cubic extension” of metrically mapped virtual space in the depicted depth. But for the reason already reviewed, “the virtual space around the tunnel is still left indefinite” (p. 526).

In diagrammatic or theoretical statement, all these manipulations seem straightforward. They have become commonplace in naturalistic depiction in the Western tradition since the early Renaissance. But in making a convincing and compelling picture – in producing a virtual world of depicted objects and event – they remain delicate and intricate operations. (New technologies and programs like Computer Assisted Design software now allow one rapidly to review and transform them. Until the end of the twentieth century, however, the push-and-pull required laborious manufacture.) Most important, as Summers points out, “although Alberti’s construction implies continuity in the virtual field it opens up, and so further implies the universalizability of the space it depicts – that is, we might suppose that the same module [used to construct the spaced mapped by orthogonals and transversals] could articulate *all* space understood as co-ordinate – such universalization cannot be achieved within the construction itself” (p. 522). Indeed, metaoptical universalization – precisely because it is beyond real-spatial and optical locatedness – cannot be presented in

any possible virtual space constructed on the basis of the visual angle. Here at last we reach the key problem and Summers' key proposition. "A one-point perspective construction cannot actually show a virtual space which is totally isometric, at the same time that it is framed for a viewer as optical, unified and continuous. The implicit metric totality of the visual field demands a kind of notional completion on the part of the viewer" (p. 526). We must project the projection. To use Gombrich's terms, we must project our share into it. And this share, to continue to use Gombrich's terms, could only be a foundational and all-encompassing schema of "three dimensional co-ordinate space" – the very spatial concept that Summers would *derive* from one-point perspective virtuality.

To be sure, in Gombrichean terms the beholder's share need not be a pure preconception – a stereotype matched by a "conceptual image" (in pre-Greek cultural traditions) or perhaps a caricature (in the Western tradition of naturalistic depiction). It can be a mediated guess accepted by the beholder on inspecting the picture – a hypothesis steered not only by a schema but also by information relayed in the representation. Either way, according to Gombrich it will be maintained as the appropriate or correct interpretation of the image, the best "completion," only so long as it remains uncontradicted by the pictorial evidence itself. For our purposes, metrically unmapped (or unperspectived) virtual space implied in the image does not always have to contradict or to "falsify" the perspective virtuality secured by that part of the image which is actually under a visual angle – or vice versa. But only the luckiest painter – or the most inattentive and undemanding beholder – encounters such a seamless case. On the whole the beholder must interpret an array of disjunctions between perspectival virtuality in a picture and the whole of its spatial virtuality – not to speak of disjunctions between its virtuality and the planarity from which it putatively develops. In many of these cases is not clear how the observer would visually complete the image – leaping through the disjunctions – in terms of a pure "three-dimensional coordinate space" free of the anomalies and ambiguities generated in the disjunctions. Although these perturbations might be assimilated as three-dimensional possibilities in coordinate space, pictorially

they must remain just as ambiguous as they are visually. And it is not always clear that the observer has been called to assimilate or overcome them in notional terms: although a metaoptical three-dimensional coordinate space might lie beyond pictorially ambiguous space as *one* of its notional completions, *other* spaces – we might call them hyperoptical – inhere in it as well. These can be notionally projected or produced as the total reality of an entire virtual cosmos. In hyperoptical space a seeming distortion, anomaly, or ambiguity in the “three-dimensional” identity and location of a virtual object can be its deep reality – and suggest the multiplicity, division, disintegration, or transcendence of the putatively homogeneous and continuous unity of coordinate space *as* an indefinitely extended production of the real space partly seen under a visual angle. Summers discovers these effects in late-modern avant-garde critiques of metaoptical modernism. But they can also be identified at the heart of the very pictorial experimentation that supposedly suggested the metaoptical reification.

We might consider Ghiberti’s gilded bronze relief of Jacob and Esau on the east doors of the Baptistery in Florence. Summers cites it as a “good example of Alberti’s construction” (p. 522), with which it was roughly contemporary (c. 1435). A beholder of Ghiberti’s relief might well suppose that the floor tiles or blocks beyond the ninth or tenth row in the distance are not actually the same standard-sized tiles or blocks which can be observed between the forward transversals in the space closer to the standpoint in which most of the figures have been situated. Here a nonperspectival – or unperspectived – virtuality apparently *disjoins* what might be inferred from or “completed” in the perspectival virtuality. Yet there is no strong visual or iconographic pressure to overcome the disjunction by homogenizing the objects: the tiles toward the back of the scene might be the same size and shape as the tiles toward the front of the scene – or they might not. As the beholder has moved into a different room – and even a different narrative time and location – the Albertian disjunction might mark a modest distinction in the projected world; after all, two Esaus – one in the foreground overlapping the near tiles and the other in the middle ground overlapping the background tiles – cannot spatially coexist in the

same three-dimensional coordinate space in any possible notional completion of it. Perhaps the disjunction will be partly assimilated as an inconsequential inaccuracy in presenting a perspectively unambiguous space. The fact that such inaccuracy can be tolerated pictorially, however, belies the putative universalization: the viewer understands that the relief shows the tiles of a room “further back” in the space of the scene – and at some other time – without unambiguously specifying that situation metrically. Again, the beholder might well suppose that Jacob is a giant. He stands four units from the baseline and yet appears to be barely shorter than the woman with her back to us on the left, standing less than one unit from the baseline. Here the perspectival virtuality – or how it might be completed – apparently *conjoins* a disjunct virtuality that responds to compositional and narrative exigencies. A hypothetical completion of the whole image in terms of *universalized* isometry might not be so much contradicted as undecidable. In the world really inhabited by the figures, maybe Jacob is a virtual giant; he looms large in the image which other people, the beholder included, have of him – an image virtualized in the picture. But maybe in virtual space – if universalized by the observer – Jacob is just his proper virtual size; he really is a giant in his, and the beholder’s, spatial world – a virtuality imaged in the picture. Both possibilities are permitted and both are pertinent; they mingle productively in the image and contribute to its pictorial and narrative richness. But they cannot be stabilized as equivalent completions of *the very same unified three-dimensional coordinate space*. A real giant Jacob belongs to a metaoptical completion of virtuality: we see that he is spatially huge. A virtual giant Jacob belongs to a hyperoptical displacement in virtuality: we see that he is notionally huge – though in three-dimensional space he would be human-sized. These interpretations of Jacob co-exist in the image; as Summers says, “the figures are generally consistent among themselves and the perspective construction provides a framework within which the relative sizes of forms can always be checked” (p. 523). But at some point in their full notional development the metaoptical space in which Jacob would really be a big man

must conflict with the hyperoptical space in which we see him to be a big man. In the picture this moment can be elided; notionally it could not be avoided.

As I understand the deep logic of Summers' art history, in the end the reason that perspective virtualities can be completed as three-dimensional coordinate space is that planarities can be completed as perspective virtualities. (I have only been able to sample these complex noetic histories – they merge in early Italian Renaissance image making – in this and the preceding sections.) *The immanent planarity of perspective virtuality motivates the completion of immanent metaopticality.* In particular, as Summers puts it, because of the planar emergences – and especially because of the original virtual planarity of the “virtual coordinate plane” – “the orthogonals in a perspective construction are ‘really’ parallel lines perpendicular to the baseline, and all modules marked off by transversals in the grid are ‘really’ perpendicular to them” (526). “Really,” here, does not mean real-spatially. It means planar-virtually. If the observer could really walk into the perspectived virtual space of the picture, he would not climb up a slightly or steeply sloping hill toward the horizon point, nor he would proportionally shrink in stature as he moved up the hill, nor would he move off-axially to the right or the left of his straight path. (An Egyptian observer looking at a one-point perspective projection, however, might conclude all of these things.) He would move straight ahead and undiminished into the field on a flat groundplane continuous with his own place of observation. Thus the real space of the oriented standpoint (and the places and centers it embodies) and the indefinitely extended or infinite three-dimensional coordinate space have been conjoined in a mediating noetic history – and in the full circuitry of their interaction they must always be reciprocally defined. But if this is so, as Summers' book might be read to show, then planarity, virtuality, and metaopticality subsist together – a founding noetic triplet – from the beginning and in all possible notional developments. They do not fully supersede one another in a sequence of “real spaces” that supposedly evolve from planar to virtual to metaoptical formations of human culture – as Summers wants to say in

his polemical moment. Rather they subsist as the basic if complex schematism of the human productive imagination when it makes all artifacts and images.

The Temporality of Notionality

In this regard, the deep problem—and reality—for Summers is not “real space” at all. It is the temporality—the absolute historical time and the cultural timing—of the differential, if mutually constitutive, immanences and emergences of planarity, virtuality, and metaopticality (*surface* order, *located* place, and *cosmic* relation) in their interaction and interdetermination as essential schematisms of making. In the manifest text of *Real Spaces* Summers himself, as I have already insinuated, imposes a metaoptical schema of time on the noetic temporalities that very schema has enabled him to discover. His reader can safely abandon that preconception; largely it reflects a postmodern-liberal interpretation of world history. The substantive question remains. If planarity, virtuality, and metaopticality are transcendental (“notional”) possibilities, what are the actual manifestations of the transcendences in history? We should not expect to find a simple linear teleology that takes us from one of the triplets to the other to the other in a single world-historical evolutionary sequence. But if we affirm that transcendence appears in any particular artifact *as* transcendence—e.g, from emergent planarity to immanent virtuality (as discussed in section *) or from emergent virtuality to immanent metaopticality by way of re-emergent planarity (as discussed in section *)—we encounter complex historical-sequential orders, and we must recognize phenomena of memory, tradition, replication, anachronism, or prolepsis.