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Maps, Mapping, Modernity: Art and Cartography in the Twentieth Century

DENIS COSGROVE

ABSTRACT: While the history of cartography has freed itself from debilitating debates over the scientific and artistic status of maps, considerations of the relationship between art and cartography have continued to focus largely on pre-modern maps, avoiding critical examination of twentieth-century art and science in cartography and leaving intact the impression that these followed distinct paths in the modern period. In this paper, however, I have drawn on theoretical work in Science Studies and taken account of modern art's separation from aesthetics to suggest that an examination of art and cartography in the twentieth century should focus on mapping practices rather than on maps as such. A summary overview of modern-art movements and selected works indicates a continued, if critical, engagement of avant-garde artists with cartography, and the examination of more popular newspaper artwork produced in the context of the intensely modern visual culture of mid-twentieth century Los Angeles indicates a similarly close connection between modernity, art and cartography.

KEYWORDS: Art, cartography, Modern art, Modernism, avant-garde, Charles H. Owens, science studies, Southern California, popular culture, newspaper maps.

Among the many questions opened up within the history of cartography by the past quarter-century's 'theoretical turn' is that of understanding the relationships between map making and artistic practice: art and cartography, for short. Some immediate parallels are found between the images of pictorial art and those of cartography. Both practices are concerned with technical questions of content selection and emphasis, medium, line, colour and symbolization, and both require similar decisions about form, composition, framing and perspective.¹ As items of quality craftsmanship and beauty, early-modern maps have served similar

functions to early-modern painting and portraiture within courtly culture, and a principal attraction of antique maps for collectors remains their aesthetic qualities. Unsurprisingly the relationship between the two practices—art and cartography—came under scrutiny in the 1980s as historians of cartography sought to bring new critical thinking to bear on the interpretation of maps and tried to broaden our understanding of mapping practices, not least the conventional historiography of cartography's evolution from art to science.

When the geographer Ronald Rees surveyed historical connections between art and cartography

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in 1980, historians of early-modern art, such as Samuel Edgerton, Juergen Schulz and Svetlana Alpers, were exposing the scale of shared theoretical and technical interests among artists and mapmakers in Italy and the Low Countries.² David Woodward brought these art historians together for the 1980 Kenneth Nebenzahl Lectures in the History of Cartography, publishing their essays in 1987 under the title *Art and Cartography*.³ In 1988, a session devoted to 'Cartography between Art and Science' was held at the 13th International Conference for the History of Cartography. There, Brian Harley challenged the 'sacred dichotomy' between art and science in the history of cartography and turned to Derridean theory of texts and Foucauldian concepts of discourse to treat all maps as cultural objects and mapping as a social and cultural activity, placing cartography outside the disabling classifications of art and science. In the same session, Catherine Delano-Smith pointed to the irrelevance to cartographical history's hermeneutic goal of distinguishing between art and science, especially when considering pre-Enlightenment maps.⁴ The art/science debate was thus intimately bound to the more general critical turn within the history of cartography.

Since then, not only have the critical interpretative and iconographic methods of art history been widely applied to maps, but interest among contemporary artists in mapping themes has significantly increased. Woodward himself identified contemporary artistic interest in maps as a principal reason for scholars to 'explore the complex intermingling of art and science ... found in the map', although his collection of essays avoided any consideration of modern or contemporary work.⁵ Most critical scholarship tends to focus on what were once regarded as decorative elements on maps, and the artists whose cartographical interests are routinely studied remain overwhelmingly drawn from the pre-modern period.⁶ Woodward's provocative reflection on current artistic interests in cartography therefore remains under explored. My intention here is to revisit his formulation in the light of more recent thinking on the relationship between art and science in general and within the context of twentieth-century artistic engagement with mapping practices and with maps as art objects. I open with a brief discussion of alternatives to Woodward's own distinction between art and science and their relevance to twentieth-century

art, and then dwell more substantively on the ways both avant-garde and popular expressions of modern art have engaged with the science of maps and mapping.

Art, Science and Cartography

Woodward's 'Introduction' to *Art and Cartography* explicitly challenged the then conventional view among cartographical historians that with modern surveying methods and the plain style of eighteenth-century map design cartography had progressed from art to science.⁷ The other essays in the volume clearly demonstrated the nullity of the distinction between art and science in pre-modern mapping. However, since none of the authors dealt with the nineteenth and twentieth centuries, from which the art/science distinction itself dates, contributors were not obliged to confront the historical implications of this distinction, and thus the essays in *Art and Cartography* unintentionally underwrote the view that pre-modern art and cartography enjoyed a uniquely close connection. Woodward's understanding of art and science relations drew on the philosopher Thomas Munroe who, while rejecting canonical distinctions between fine and useful arts, still cleaved to aesthetics as a defining characteristic of art. Thus Woodward maintained an essentialist and methodological art/science distinction, differentiating an artistic method that is 'basically synthetic, autographic, and creative' from a scientific method that is 'analytical, independent of the scientist and reportive', and he appealed to neurological science to support the claim.⁸

Woodward's methodological embrace of aesthetics as the distinguishing feature of art can be challenged from the perspective of practice in both science and art, especially in relation to twentieth-century work in both fields. There is now a significant literature on the constitutive role of visual images, including maps, in the practices of science. Its import is to undermine claims that science's 'analytical, independent and reportive' method makes no call on the persuasive role of aesthetics. Indeed, work published in the field of Science and Technology Studies since Woodward wrote has considerably reconfigured our understanding of how science works.⁹ Science's nexus of instrumentation, mechanization and objective-representation strategies (such as quantification or photography) does not escape aesthetic appeal. Rather, science deploys the aesthetics of plain style within a broader persuasive strategy. Mathematics,

language and illustration, including various forms of maps, play a major role in securing claims to the universality, authority and immutability of scientific knowledge. Thus Alexander von Humboldt's early nineteenth century introduction of the isoline, and the subsequent development of thematic cartography to illustrate his cosmographic arguments, drew upon the authority previously gained by instrumented topographical survey and the aesthetics of plain-style mapping.

These developments helped secure claims about spatial relations and processes that are invisible to the individual observer and that are often based on evidence geographically removed from the site of map use. Numbers, lines, colours and key coding reinforce the thematic map's scientific status as an 'immutable mobile', to borrow the philosopher of science Bruno Latour's term for an instrument that preserves the meaning and truth claims of scientific observations as they circulate across space and time.¹⁰ Maps, in common with other forms of illustration, have the goal of making present a distanced absence, although some artistic images arguably make the further claim of creating a 'virtual space', since their 'aura' refigures the space in which they are located.¹¹ Latour further points out that in the process of circulation by which scientific knowledge is universalized, 'information is never simply transferred, it is always radically transformed from one medium to the next ... it pays for its transport through a heavy price in transformations'.¹² To achieve immutability (for example, by means of a scientific map), the information contained undergoes transformation, a process which, in principle, is not different from that of artistic production of spatial images.

The shared epistemology of art and science which Woodward's art-historical contributors were discovering in pre-modern images is thus true for work from any historical period. It has remained obscured, however, by claims for representational objectivity developed within modern science. As Latour points out,

it was much more difficult to extirpate scientific activity from its epistemological past than to free art history from aesthetics ... Once the two moves were completed, a vast common ground was opened and, in recent years, a flurry of studies has 'vascularized' the connection between visualization in science and the visual arts.¹³

These moves set the context in which critical deconstructions of scientific mapping projects have

revealed the significance of culture, location, individual subjectivity and artistic imagination in the creation of maps as scientific instruments.¹⁴

Latour's reference to the freeing of art history from aesthetics signals a second challenge to Woodward's framework from the perspective of art practice. The art historians who contributed to Woodward's *Art and Cartography* largely avoided considerations of aesthetics. In this they reflected a significant shift then in progress within art history away from formal analysis and aesthetic appreciation and towards interpretation and criticism. In fact, among artists themselves, aesthetics had been under siege for much of the twentieth century. Artists' embrace of the revolutionary political term *avant garde* betrays a concern that self-consciously modern art should break with such bourgeois and commercial concerns as beauty and aesthetics.¹⁵ Their manoeuvre prejudices any attempt to study the quite considerable engagement of twentieth-century artists with maps within the rubric applied by Woodward to pre-modern art and cartography. Indeed, just as Science Studies have directed attention away from the truth claims of science towards its specific and located practices, including its use of cartography, so the artists' move directs us away from the map as art and towards the place of cartography within artistic practice, which in the case of avant-garde art is considerable. That said, it is important to acknowledge that avant-garde ideas and practices by no means encompassed the whole of what goes under the rubric of Modern art in the twentieth century, and that Modernism has found many other artistic expressions, some of which also involved maps and map making. Pictorial mapping exploded in the middle years of the twentieth century in such popular media as newspapers, magazines and film, where it was strongly influenced by some of the same cultural currents that gave rise to Pop Art.

Avant-garde Art and Cartography

By the end of the nineteenth century the practices of modern cartography were well in place. States had surveying and cartographical institutions producing topographical maps of their territory and of their colonial possessions; statistical mapping was a significant tool of bureaucracy and social regulation; and map use and interpretation were widely taught in schools. Cartography was a profession that embraced such scientific practices as classification, quantification and instrumentation to secure the truth of its visual records and representations. Later photography and aerial

survey reinforced the trust in mimesis. Early twentieth-century Modern artists were similarly concerned with the relationships between vision and space, but their recognition of the complexities and subjectivities involved directed the attention of groups such as the Post-Impressionists, Fauvists and Cubists away from cartographical concepts and practices as objects of potential artistic interest. Crudely speaking, while cartographers were striving for methodological rigour in such matters as projection, scale, topographical representation and nomenclature, regarding the achievement of such rigour as a foundation for the neutrality and universality of their images, art was dominated by a series of avant-garde movements whose intention was to criticize and subvert long-standing ideas and practices of representational art. That critical intent soon redrew the boundaries of art itself as a socially and politically engaged activity.

Closer examination of art interests and practices suggests some nuances to this familiar story. Given the concern with space—notably the spaces of the picture surface and of the artwork's location—artistic experimentation occasionally generated images that have a strongly cartographical feel. Futurism in the late 1910s and in the 1920s, for example, was inspired precisely by the ways in which modern technologies had transformed the experience of space and time. Futurists responded enthusiastically to the same opportunities for seeing the land from an aircraft which challenged and expanded cartography itself. Italian aeropaintings, for instance, conveyed the experience of speed and fractured vision which the view from an aircraft allowed; many sought to capture new visions of geographical space: of the island, of the city, of the farms and fields of rural landscape.¹⁶ Italian embrace of Modernism extended into cartography as geopolitical mapmakers employed its design strategies and typography to dramatize their cartographical arguments.¹⁷ Criticism of such propaganda mapping in the 1940s by cartographers concerned to preserve the scientific neutrality and authority of maps anticipates responses in the 1980s and 1990s to deconstruction. Brief consideration of two key twentieth-century avant-garde artists permits closer examination of the complex connection with mapping and maps.

Duchamp and Johns

Marchel Duchamp (1887–1968) is considered one of Modernism's guiding spirits and a key influence

over avant-garde art practices. His 'readymades' of the 1940s—common objects of everyday use only slightly modified, if at all, by the artist but turned into art by selection and relocation alone—radically transformed the territory conventionally ascribed to art. James Housefield has recently argued that the readymades were strongly influenced by a cartographical impulse to represent actual spaces. Today, Duchamp's readymades are scattered through a range of galleries and thus are treated as discrete objects, but they were originally gathered together in his New York studio and made visible to his friends and visitors as a collection of related objects. Housefield shows that each object can be connected, conceptually and to some extent formally, to a specific site in Paris. Thus the *Bottle Rack* (1961) makes reference to the Eiffel Tower and the *Bicycle Wheel* to the nearby Ferris wheel. Through these objects a 'map' of Paris constructed by means of its monuments is transferred to New York. Housefield notes the popularity in Duchamp's youth of pictorial maps as guides to monumental Paris. These mass-produced colour lithographs represent one example of the explosion of popular mapping in the twentieth century discussed below. Housefield suggests that

Duchamp's readymades engage analogy, humor, and shifts in scale to translate elements of the human made urban landscape into the interior landscape of the studio. Such shifts and translations parallel the physical and conceptual transformations of landscapes into cartographic representations, or maps.¹⁸

Housefield closes by remarking, that although modern art does not always represent the landscape in immediately recognizable ways, the relationships with geography merit more consideration than they have received. His claim must obviously extend to cartography, given the close alignment of geography with map making for most of the twentieth century.

Examining relations between modern art and cartography is significant in view of Modernism's consistent desire to confront figurative and representational conventions. Modern painters displayed intense interest in the grid as a pictorial device. Indeed, as Rosalind Krauss points out, the grid became arguably 'the emblem of all that is quintessentially Modern in art'. But their response was to the grid's capacity to express 'the absolute autonomy of art—anti-natural, anti-mimetic, anti-real'—rather than to its ability to frame and compose the spatial arrangement and scalar representation of material places and landscapes. 'Unlike

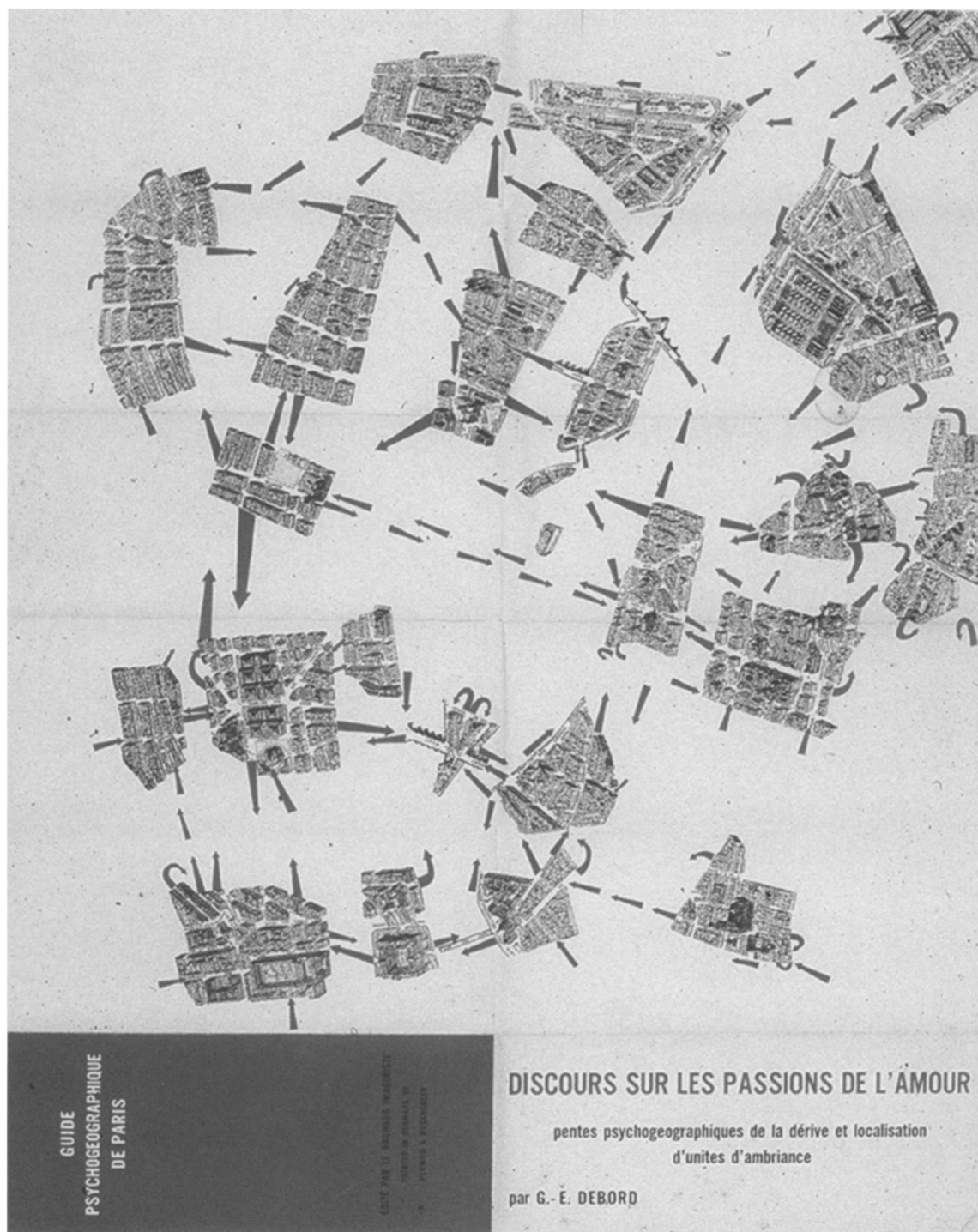
perspective, the grid does not map out the space of a room or a landscape or a group of figures onto the surface of a painting. Indeed, if it maps anything, it maps the surface of the painting itself'.¹⁹ Thus Jasper Johns's encaustic and collage *Map* (1963), frequently reproduced in summaries of cartography in twentieth-century art, may be read as an extension of his Modernist fascination with the painterly surface as much as a direct engagement with cartography. Johns's image looks like a crude map of the conterminous states of the United States, each labelled and rendered in a different colour. The wax-like encaustic is thickly layered, and the brush strokes are obvious. They draw attention to the unstable surface of the image as much as to the provisionality of meaning in the mapped space. Johns consciously juggles with cartographical conventions: varying the lettering and nomenclature of states, cutting place-names off at the margins, and using a muted grey palette set off by occasional points of primary colour. The 'key' in the corner of the image, in blocks of primary colours, refers only to itself, rather than the contents of the 'map'. Collage pieces, barely visible until the eye is too close to discern the cartographical surface, preserved by the encaustic material used to depict the states, denote specific places and times. Johns is questioning the pretence of the map to be more than its surface.²⁰

Surrealism and Situationism

Surrealism was the avant-garde Modern-art movement that explicitly engaged cartography as practice rather than simply the map as image. Its interests in image perception found echoes in the scientific concept of cognitive mapping that developed in the late 1950s.²¹ Post-war advances in cognitive psychology challenged many of the assumptions about the transparency of representational images by emphasizing the importance of individual and social perceptions. Ability to recognize and understand map images was learned and cultural rather than a function of the map's scientific objectivity and design clarity. In the same mid-century years Situationism, a second-generation Surrealist movement, stimulated intense interest in the map as a communicative device and in the subversive potentials of mapping practices. Situationism's conscious move beyond the art world of studios and galleries into the spaces of everyday life reinforced this concern with mapping as a means of engaging graphically and actively with material spaces.

Although in the 1960s, many members of the Situationist International rejected art altogether in favour of radical Left activism on city streets, Guy Debord, whose film making had stimulated an interest in spectacle and space, sought to connect art practice directly to the geography of the city. His concept of psychogeography was part of a set of radical responses to rationalist and functionalist urban planning (heavily reliant on statistical and thematic mapping practices), which he believed to be destroying the social and psychological well-being of urban communities. Psychogeography was 'the study of the specific effects of the geographical environment, consciously organized or not, on the emotions and behavior of individuals'.²² The connected practice of the urban *dérive*, or drift, intended to generate chance encounters and provocative interactions with other individuals, involved a kind of subversive survey of urban space that both stimulated and recorded 'transient passage through varied ambiances'.²³ Thought of cartographically, the *dérive* was a conscious challenge to the apparently omniscient, disembodied and totalizing urban map that had become the principal instrument for urban planning and 'comprehensive redevelopment' during the post-war years. The *dérive* was intimately connected to Debord's third concept of 'unitary urbanism: the combined use of the arts and techniques for the construction—or preservation—of environments in which the *dérive* and psychogeographical experiments would prosper'.²⁴

To illustrate these experiments, between 1955 and 1959, Debord and his Danish colleague, Asger Jorn, produced various collages bringing together map fragments, images and texts that captured urban space and experience in Paris and Copenhagen. These works 'have a strongly cartographic appearance due to the dribbled lines of coloured ink which link the pictorial fragments, as canals or a river might link landmarks within a city'.²⁵ Like Duchamp, Debord's psychogeographical street maps of Paris drew upon popular pictorial maps. Debord explicitly used G. Peltier's *Guide Tirade de Paris* (1951) and his *Vue de Paris à vol d'oiseau* (1956) (Fig. 1). The totalizing and commanding vision of the city that Peltier's pictorial maps offered derived in part from aerial photography, whose relationship with pictorial mapping is considered in greater detail below. Pictorial maps perfectly captured the distanced spatial vision of mid-century urban planning in European cities



Gy Debord, 'Situationist Map of Paris Using G. P. L'Her's 1956 *Vue de Paris à vol d'oiseau*', in *Guide psychogéographique de Paris: Discours sur les passions de l'amour* (Denmark, The Imaginist Bauhaus, 1957). Debord's dust jacket for the book illustrates the concept of the *dérive* as a mode of experiencing the city intimately from below. The mastering perspective of the bird's eye view is broken into arbitrary fragments representing districts to be walked and in which encounters might take place. The red arrows connecting these spaces represent taxi rides or other less intimate connections across urban space.

such as Paris, Amsterdam and London which so enraged the Situationists. Hermann Böllmann's *Vogelschaukarten* from the 1940s and 1950s are perhaps the most widely reproduced examples of this genre of urban map. Böllmann's axiometric image of Manhattan—the paradigm Modernist landscape—renders to great visual effect the synoptic, mastering gaze that Michel de Certeau, heir to the Situationist critique, later dissected in his *The Practice of Everyday Life*.²⁶ The Situationist response to the urban vision represented by such cartography was to cut the map of Paris or Amsterdam into 'islands' of urban space joined only by thick red arrows or dark ribbons that evoke the emotional and passionate connections made within and between such locales by the artist/mapmaker himself. Urban 'mapping' is thus transformed into a pictorial-art practice that records another, performative art, the urban *dérive*.

Conceptual Art and Beyond

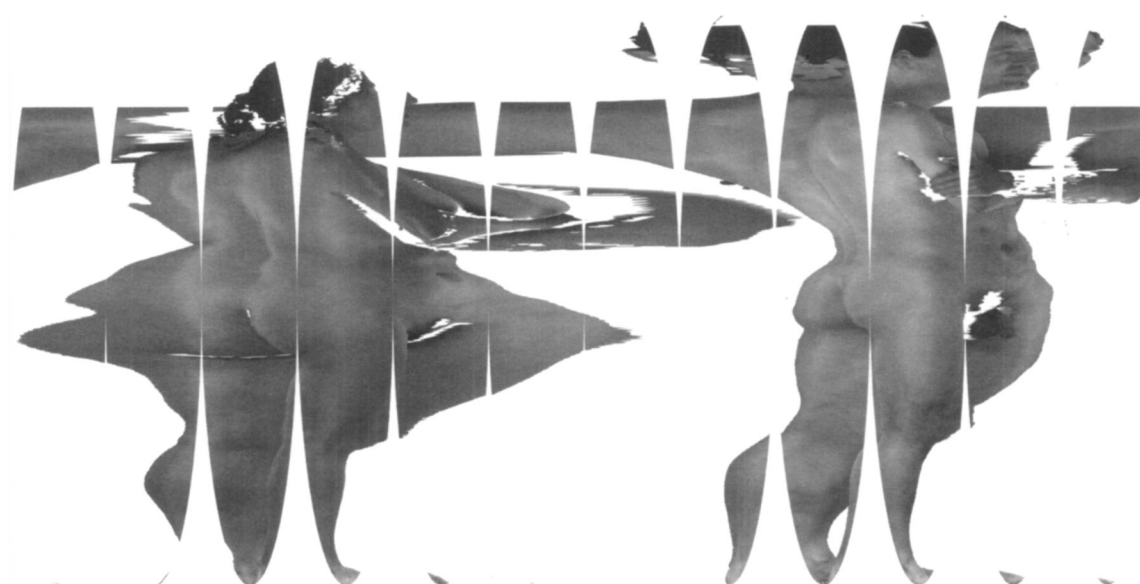
In the late 1960s and 1970s, conceptual artists, for whom painting—irredeemably compromised in their opinion by an inherited baggage of canonical practice—had reached the limits of expression, also took an interest in mapping. Adopting a less activist relationship with social issues than the Situationists, conceptual artists focused on the *idea* of an artwork, on theoretical methodologies of documentation, on site and on performance. These concerns directed their engagement with cartography further towards the processes of mapping rather than towards the graphic forms of maps as such. Their interests in documentation and site specificity, for example, not only signalled the value of the map as a mode of spatial representation but also recognized that the very concept of mapping and its powerful visual codes made it a highly effective subject for creative manipulation.²⁷ From its earliest stages maps played a role in conceptual art. In 1959, Yves Klein, a precursor of conceptual art, famously covered a schoolroom globe in his trademark blue pigment YKB, anticipating the theme of the blue planet that would come to dominate popular global mapping in the space age.²⁸ In the New York artist Douglas Huebler's *Site Sculpture Projects* (1968), maps play a dual role of instantiating the site and documenting the projects, whose aim was to redefine the concept of sculpture. In another of his works, *42nd Parallel*, he identified as A to N fourteen towns across the United States, each lying exactly on the

42° North latitude line. Postal receipts were sent to and received from each of the locations at A, Truro, Massachusetts. Documentation of the 'sculpture' included a map showing the line of towns and also two city maps. Like Jasper Johns's earlier map, the conception of Huebler's project owes much to the 'mapped' nature of American social space, in which political and survey boundaries are strongly orientated to lines of latitude and longitude.

Other works by Huebler also leaned heavily on maps. For *Location Piece #2*, water canisters were buried at marked points within the California desert and subsequently documented on various types of map. In other projects the artist drew, like Duchamp and Debord before him, upon the ubiquity and disposability of 'little' maps in modern culture, in his case using Shell auto maps, airline route maps and urban road maps as materials for his art.²⁹ For Huebler, objective, scientific and even banal everyday aspects of the map became positive advantages in supporting the goal of divorcing art from visual pleasure. As generally in Modernism, the connection between art and cartography involves a conscious rejection of traditional aesthetics.

Conceptual and post-conceptual artists from the 1970s to the present have sustained this critical conversation with cartography. A recurrent theme in site-specific and performance art has been the use of interactions between people and things in material space to 'map out' locations, routes and journeys within cities. Thus the language and practice of maps have been deployed to structure such journeys and interactions, as in the case of Yoko Ono's *Map Piece* (1962) and the more sustained topographical work of Land Artists discussed by Stephen Bann.³⁰ More recently, the artist Roger Dion's documentations of objects 'archaeologically' recovered from tropical rain forests, industrial-wasteland sites and the Thames mud flats at Putney, London, work with the classificatory aspects of mapping as a mode of defining sameness and difference through spatial bounding.

Other artists have been attracted less to the survey and recording aspects of mapping than to the techniques and processes of map making and to ways of manipulating such apparently determinative elements as projection and scale. Agnes Denes's *Isometric Systems in Isotropic Space—Map Projections* (1974) projected the world map on to such mathematical figures as the cube, doughnut and snail shell. Lilla LoCurto and William



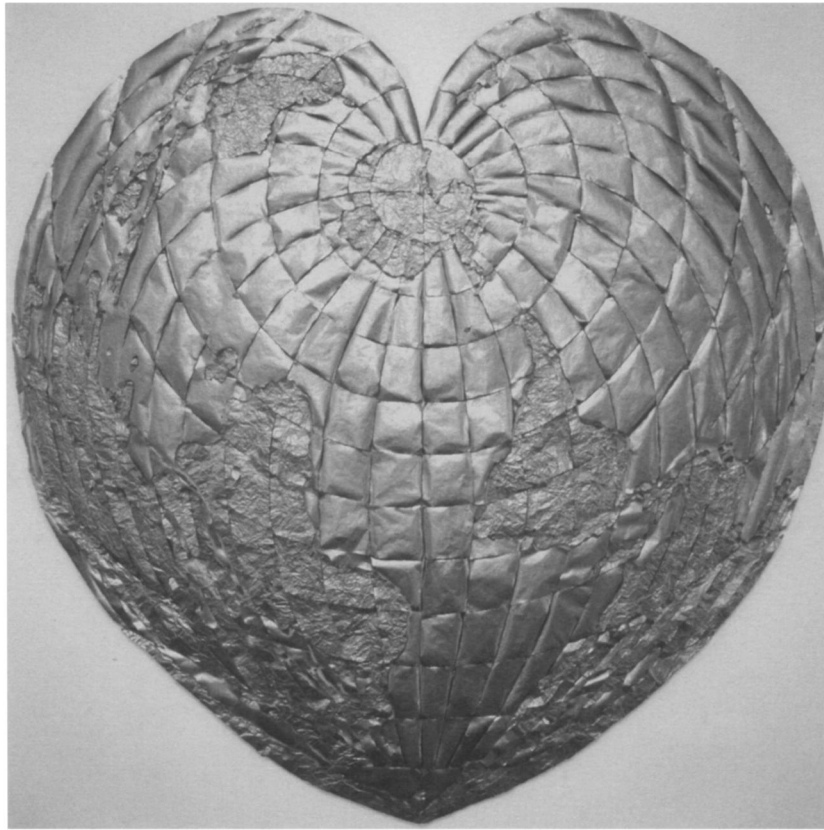
Lilla LoCto and William Outcault, 'Imag. of the artists' scanned bodies as globe gores'. 122 × 244 cm, chromogenic print from *Selfportrait.map* (2000). This is just one of a series of images in which the New York artists juxtapose the portrait and the nude using state-of-the-art computer technology to create images derived from three-dimensional digital scans of their bodies. The skin appears stripped from the body and flattened into a two-dimensional surface using conventional cartographic projections. As a solid object, the surface of the human body, like that of the globe, cannot be represented in two dimensions without distortion. Apianusll BL3cy 17-98. (Reproduced with permission of the artists.)

Outcault's *Selfportrait.map* (2000) used a selection of spherical projections to explore the formal relationships between the globe and the human body and the technical problems of representing their curvilinear surfaces on the two dimensional plane (Fig. 2). Mapping the magnetically scanned surface of their own bodies according to various projections makes a powerful statement about visibility and invisibility of the body and the transformations that scientific representation entails. LoCurto and Outcault's images evoke the shared interest of Renaissance artists and map-makers in the representational power of geometry and projection.

Such historical reference brings artistic work close to the specific interests of historians of cartography, and a number of artists have drawn directly on that scholarship. The New Zealand artist Ruth Watson has devoted numerous works since the mid-1990s to an exploration of the cordiform projection, initially developed by Oronce Fine. Watson makes heart-shaped images of the world centred on the South Pole rather than the North, creating them from photographs of the tongue's surface and metal pins (*Lingua Geographica*), gold chocolate wrapping paper (*Take Heart*), and salt. She displays them in locations closely connected

with mapping and colonialism such as the Stedelijk Museum in Amsterdam and recovers something of the history of cartography itself. The maps confront the dialectics of global harmony and colonial exploitation that are stimulated by a cordiform world (Fig. 3). Further exploring the connections between cartography and imperialism, the English artist Pat Naldi projected maps of unclaimed territories and a childhood map of the British empire onto the walls of the British School in Rome in 2001. Laura Kurgan meanwhile has addressed the politics of contemporary mapping technologies, using SPOT satellite images taken during the Balkan wars of the 1990s to map out the locations of mass graves of ethnic cleansing in Kosovo. This work, like many contemporary art projects, is circulated through the Internet.³¹

The critical and post-colonial aspects of Watson's, Naldi's and Kurgan's map images reflect an established radicalism in conceptual art's engagement with mapping, one that parallels the critical turn within cartography itself that dates from the 1980s, when Alighieri Boetti's *Mappa del Mondo* (1989)—to take a single, widely reproduced example—combined the taken-for-grantedness of the world map and the flags of nations to generate



Rth Watson, *Take Heat* (1998), gold chocolat. wrapping paper and metal pins, 160 cm diameter. This is one of a number of Watson's projects in which she draws upon and reworks the long emblematic tradition of the global cordiform projection which associates it with memory, love and harmony on earth. Using the gold foil from chocolate wrappers, she plays upon the associations between chocolate and love, to be sure, but in a more critical mode, memory of the product as a colonial plantation crop. By projecting from the South Pole she also disrupts the eurocentrism of conventional world mapping. Image courtesy the artist and Christchurch Art Gallery–Te Puna O Waiwhetu. (Reproduced with permission of the artist.)

a striking image of geopolitical division. In recent years, the ideological stridency of some critical artwork has been paralleled by a more nuanced artistic use of the map. This reflects a recognition that deconstruction has successfully challenged the map's naturalizing powers and our ability to acknowledge the visual appeal of mapped images, without necessarily evading their problematic connections with power and exploitation. Thus the Irish artist Kathy Prendergast has developed a series of works in her *Atlas of Emotions* (1999) which abstract from topographical maps of Canada and the United States place-names that record European colonization, such as the psychologically charged toponym 'Lost.' (Fig. 4). Re-mapping these words challenges assumptions that colonial exploration and cartography were straightforward acts, never complicated by ignorance, incompetence or fear on the part of the conquerors. They

suggest the coexistence of cognitive dissonance in unfamiliar territory and affective relations with the earth's surface.³² Prendergast's *City Drawings* (2001) trace the intricate and beautiful street patterns in the world's capital cities while challenging their usual hierarchy of size and political or economic significance by removing names and indicators of scale. In a similar vein, the Japanese artist Satori Matoba skilfully dissolves maps of different but politically connected locations into each other. Her image of *Pearl Harbor/Hiroshima* (1998), for example, disrupts the taken-for-granted meanings of both places by merging the two topographical maps into a single, visually smooth cartographical surface (Plate 3).

The engagement of contemporary art with cartographical images and practice, sanctified by a series of major exhibitions in the 1990s, has thus developed into a field of intensive and continuing



Kathy Prendergast, *Lost*, detail of the western United States from her *Atlas of the Emotions* (1999). Digital print. Original image 84 × 132cm. Prendergast's map of the United States highlights place-names containing the word 'Lost'. The image sees both the familiarity and the authority of the topographical map to challenge our understanding of place-names as cartographical markers of meaning. Not only does it upset 'official' hierarchies of place in maps, but also colonialist's assumptions about control over the spaces of exploration. (Reproduced with permission of the artist.)

work, in which the map is the focus for widely diversified critical and graphic attention. The complex history of twentieth-century relationships between cartography and the artistic avant-garde awaits a detailed, authoritative study. Such a study will need to engage—and indeed map—the highly complex and varied expression of Modernity in art and may reveal unexpected impacts of art theory and practice within cartography itself.

Popular Culture, Art and Cartography

I have concentrated so far on avant-garde Modernism that was highly intellectualized and concentrated in a limited number of artistic centres such as Paris and New York. But the avant-garde was not hermetically sealed from popular culture, and Modern art had a highly varied expression, extending well beyond the circle of self-consciously radical artists and comprising a more complex geography than just these two cities. For the more popular artistic expressions of Modernism, I draw on work in Los Angeles, a city whose significance in twentieth-century popular culture parallels that of Paris and New York. By the 1930s predominance of the film industry in Hollywood attracted a huge range of artistic talent to Southern California, generating innovation in many fields of graphic art, including line drawing, cartoons, comics, posters and other forms of commercial illustration. By the 1960s this work was beginning to have an impact on such avant-garde movements as Pop Art, irrespective of the earlier interest shown by Salvador Dali, a canonical figure in Surrealism who had worked closely with Disney Studios in animated film.

Before turning to the direct impact of Hollywood on popular cartography, it is important to recall the significance of the map more generally in mass culture in the twentieth century. Maps were among the many graphic objects that had entered popular culture and were transformed by it. Map images became ubiquitous in mass media; they were found in newspapers, on screen and in advertising, travel and tourism. By mid-century, both cartographical literacy and graphic-communications had become so pervasive that scientific cartographers, despite their professional status, their claims to representational accuracy and clarity, and the technical sophistication of their work, found it impossible to control the output of cartographical images. The cartographers' very success in achieving scientific status for their work had given the map enormous authority in modern

culture. Faced with the volume of popular maps produced for casual consumption, professional cartographers were frequently reduced to impotent rage at the vulgarity and inaccuracy of what passed for a map, and they sought to establish clear distinctions between objective scientific maps and popular subjective and, at worst, 'propaganda' maps.³³ Those who produced maps in news journals and magazines rarely possessed the technical training of professional cartographers, nor would many have made a serious claim to any artistry for their work. Mark Monmonier describes twentieth-century journalistic mapping as 'a distinctive cartographic genre ... generally simple in content and symbolization ... Unfortunately', he states, 'news publishers tend to hire artists untrained in cartographic principles, and news maps sometimes reflect an ignorance of map projections or cartographic conventions'.³⁴

Monmonier's evidence entirely supports such a conclusion, but his judgment betrays a lingering attachment to scientific cartography as the criterion by which all map images are to be evaluated. Despite its obvious attractions, this assumption can be restrictive. Placing popular map images within the context of modern culture's consistent erasure of canonical distinctions and hierarchies yields a richer understanding of their role and relations with both art and cartography, as Susan Schulten has shown in her study of Richard Edes Harrison's wartime map making. Harrison's 1944 atlas, *Look at the World*, contains some of the most graphically adventurous maps of the twentieth century. These were intended for a mass audience, but for professional cartographers they sailed dangerously close to the shoals of 'persuasive' geopolitical mapping.³⁵ Despite Harrison's lack of formal cartographical training, he nevertheless recognized the advantages of orthographic and azimuthal projections for conveying the scale and spatial relations of a world shrunk by powered flight. His foreshortened picture-maps illustrated geo-strategic relations as if viewed from the cockpit of an infinitely high-flying aircraft. Although Harrison constantly emphasized that his maps showed the 'true' nature of spatial relations in a world of air power, he was equally explicit about their persuasive function; they were intended to explain the first truly global conflict to citizens in a modern democracy through graphically dramatic images published in mass-circulation photo-journals such as *Life* and *Fortune*.³⁶

Harrison was by no means the only innovator to respond to the challenge of cartographical education in mass culture during wartime. His friend and colleague Walter Ristow celebrated the extraordinary efflorescence of novel cartographical images in America between 1941 and 1945, even while criticizing their scientific inadequacy and arguing that lack of colour printing, deadline pressures and the demands of editors confined the best of these innovations to periodicals and news magazines rather than newspapers.³⁷ However, at least two California daily newspapers did publish highly original, full-colour maps explaining the war to their readers in considerable and vivid detail. Although neither scientific in their cartography nor consciously avant-garde in their art, the creators of these maps called upon both the scientific authority that the map possessed in modern society and the graphic techniques developed in films and comic books to produce dramatic spatial images for a mass readership.

Pictorial War Maps

From the 1930s into the 1950s, both the *Los Angeles Times* and the *San Francisco Examiner*, devoted whole pages to what are best called pictorial maps. The maps were the work of the newspapers' staff artists, Charles Hamilton Owens and Howard Burke respectively.³⁸ The pictorial style of two artists is similar, although their personal relationship is unknown. Each had adopted an axiometric form of mapping, often incorporating detailed cartographical studies, drawings and realistic landscape features such as buildings and vegetation into the main image. Blocks of text and labelling provide explanatory narrative (Plates 4 and 5). In Owens's case, a characteristic feature was to surround the map with comic-book style pencil sketches dramatizing its subject or promoting geographical recognition through iconic locational images of, for example, the Sphinx, St Peter's Basilica in Rome or the stupas of Burma.

Owens was more prolific than Burke. From the time he joined the *Los Angeles Times*, he sketched maps alongside his drawings of court-room scenes, crime locations, sporting events and the myriad other items a news artists was then called to illustrate. Among Owens's earliest maps are those describing the fate of the German colonies in the Versailles negotiations of 1919 and the 1922 division of Ireland. But his cartographical contribution peaked in a series of nearly two hundred full-page, colour war maps published on Mondays

between February 1942 and August 1945.³⁹ Various features of these maps stand out in the cultural context of mid-century modernity. Regardless of the scale of the area mapped, be it the African continent, the Pacific Ocean or a tiny Pacific atoll such as Wake Island or Truk, a sharply curving horizon places the observer high in the heavens, as a witness to the earth's curvature, while swooping low over the details of topography and landscape. Synoptic views combined with detailed topography were, of course, the features of pictorial mapping that attracted the critical attention of avant-garde artists. Owens did not share those artists' critical response. Instead, his maps reflect the excitement and imaginative stimulus of what mid-century American political commentators called 'the airman's vision', a synoptic, global perspective that Owens brilliantly illustrates.⁴⁰

Owens worked with the help of a two-dollar, twelve-inch globe, which he photographed from the most pictorially effective angle. For smaller scale features, he relied on press maps supplied by telegraph wire services, which he copied or traced to provide a base map to which he pasted other elements of the final image: topographical sketches, blocks of explanatory text, directional arrows, other symbols of movement and his cartoon action scenes. Another characteristic feature of Owens's maps is the sketched battle scene or landscape, rendered in pencil and charcoal and placed above the horizon line to frame the mapped space (Fig. 5). These scenes give his cartography the intensity and immediacy of reportage, in the style of the war comics that remained popular into the 1950s. The most obvious source of Owens's vistas is the storyboard, with which visits to film studios had familiarized him. Map and narrative sketches often interpenetrate as the latter invades the former, producing dynamic effects reminiscent of films or newsreels as in Figure 5 and Plate 5. Owens's use of the directional arrow, barbed 'front' and solid line barrier came from military mapping and geopolitics and were graphic techniques used to enhance the sense of dynamism within his maps. Long, curving coloured arrows stretch across Pacific distances, illustrating the direction and speed of the Japanese campaign (Fig. 6). Here too the influence of Hollywood is apparent: an opening sequence of dotted lines or arrows snaking across a map to set the story's context was a common device in the Hollywood films of the 1940s.⁴¹



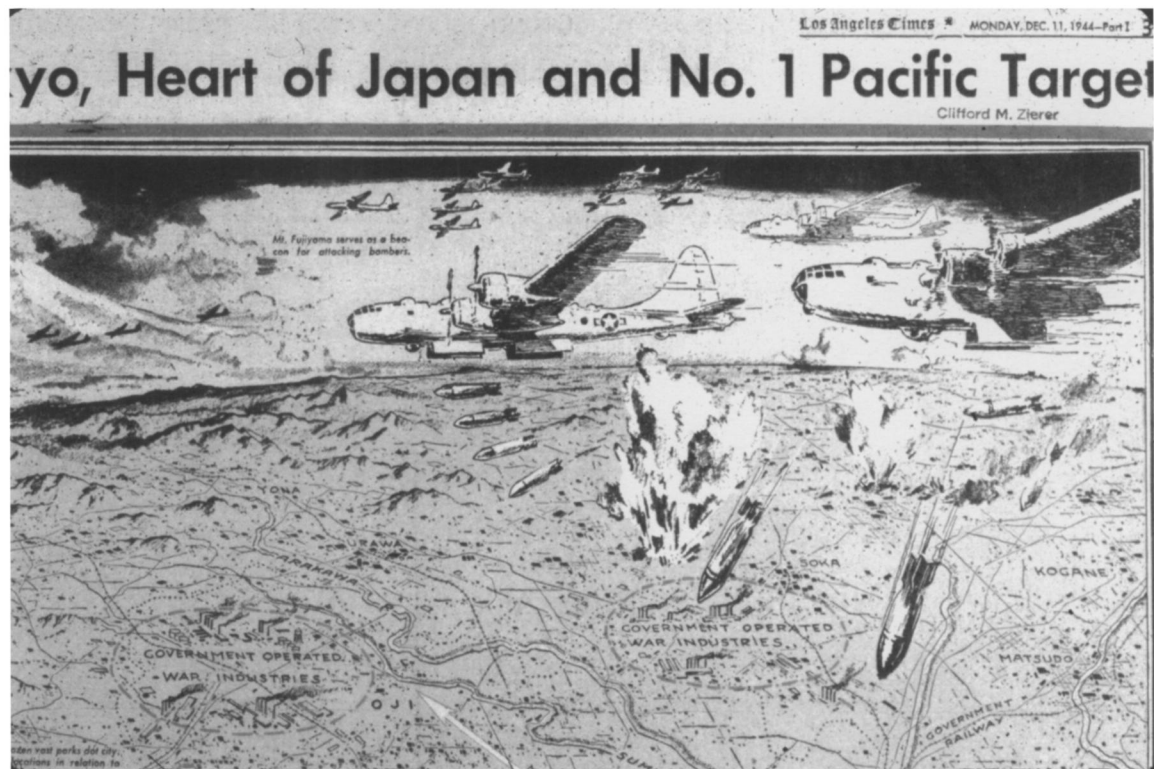
Detail from Charles Owens: 'Will Hitler drive into Spain in new thrust aimed at Gibraltar?', from the *Los Angeles Times*, 28 December, 1942. The map is reproduced in full in Plate 5. Owens's dramatic charcoal sketch of a German air attack over the Rock of Gibraltar recalls Hollywood storyboard and later comic strip illustrations.

Owens's various techniques for constructing informative but dramatically suggestive maps have distinct Modernist echoes. Collage, which pastes together fragments in different media—naturalistic images, texts and cartographical symbols, for example—to produce a visually coherent single image, was pioneered by Picasso, Braque and other Cubist painters in the years immediately preceding the First World War as a form of *visual rapportage*. For Owens, the technique captured well the strategic imperatives of the first air war, especially the combination of air sorties, naval engagements and military island-hopping that characterized the Pacific campaign. The provisional nature of the image also enhanced its dramatic qualities.⁴² More conventional techniques, such as colour selection and tone, play a central role in Owens's maps, enhancing their urgency by speaking directly, often harshly, in primary blocks, or emphasizing the gloomy drama of war landscapes in their margins. But these various techniques do not trace formal influences from Modern art on Owens's work, rather they reflect his immersion in a Southern California visual culture that was Modernist without being avant-garde, a culture that emphasized speed, the moving image and

dramatic graphic communication. Conservative in pictorial style and lacking contact with self-conscious art movements, Owens's highly innovative mapping reveals the influence of a less theorized but more popular and permeable Modernism that suffused twentieth-century Southern Californian culture. Many aspects of that culture involved radical transformation of spatial experience and representation, and thus of the possibilities for mapping.

Pictorial Maps and Popular Culture

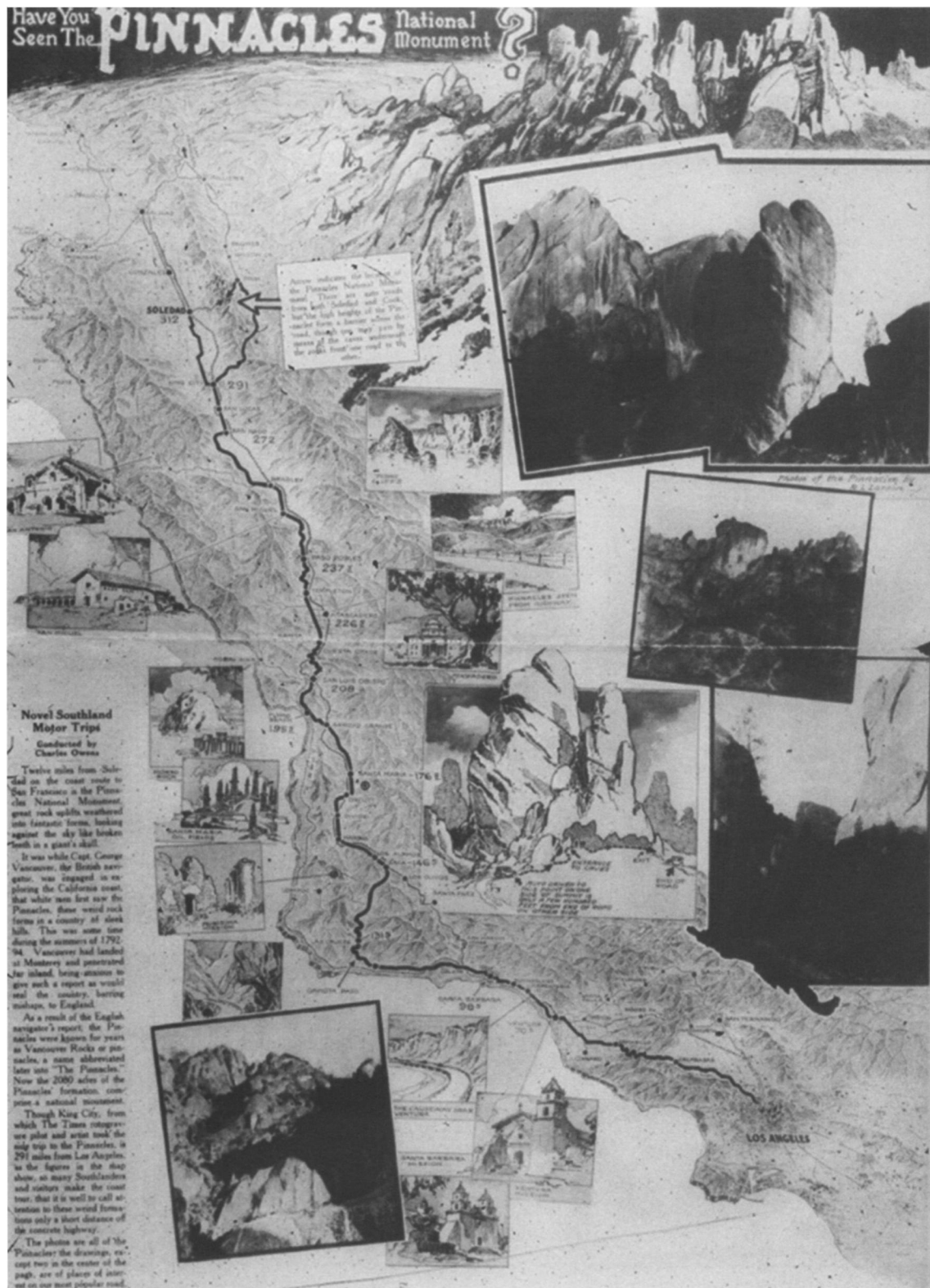
Charles Owens's cartography drew upon and contributed to a modernist visual and spatial culture in the making in 1920s and 1930s Southern California. It was a culture closely associated with the modern technologies of cars and aeroplanes, films and comic strips. Owens's importance within it lies in his thirty-year employment as the *Los Angeles Times* news artist. The *Times* publisher—Owens's employer and friend—was Harry Chandler, around whom orbited both local oligarchs, who shared Chandler's hotel and real-estate interests, and a bohemian intelligentsia associated with the city's entertainment and academic institutions. All shared the vision that



Charles Owens, 'Tokyo: heart of Japan and No.1 Pacific target', *Los Angeles Times*, 11 December 1944. Owens retains the evging global horizon .even for such a detailed map as this on of central Tokyo, illustrating the American bombing of the Japanese capital. Districts and streets are illustrated, and the map suggests that the Flying Fortresses are targeting 'government operated war industries' rather than fire bombing civilian districts as was often the case. The intrusion of the battle scene into the map is typical of Owens's most dramatic war images.

Chandler trumpeted in his newspaper, of Los Angeles as a city of the future, an industrial, commercial and cultural core for Southern California. Owens's artistry contributed directly to the vision by illustrating many of the engineering, architectural and cultural projects that were to transform Southern California's twentieth-century landscape. His 'pencil work ... helped build the Harbor, ... the Owens River Aqueduct and other projects by enabling persons to see compelling visualizations of the undertakings through his perspective drawings'.⁴³ Many of his drawings incorporated bird's-eye landscapes and maps based on the artist's astonishing capacity to re-create topographies either from studies made during his frequent flights over the region or from memory.⁴⁴ During three decades, Charles Owens mapped Southern California's spaces of modernity using the orthographic perspective that so fascinated artists such as Duchamp and Debord. But his vision grew out of such popular-cultural features as the automobile, aerial photography and film rather than any formal theory of the art of cartography.

Early in Owens's career at the *Los Angeles Times*, he produced a set of landscape paintings to serve as full-colour cover illustrations for *Touring Topics*, the Automobile Club of Southern California's monthly magazine.⁴⁵ The Auto Club, founded in 1921, served as a booster for the region and as a promoter of the principal agent of its landscape transformation, the car. By the mid-1920s more than half of Los Angeles's families owned cars, but until well into the 1930s automobiles were regarded primarily as free-time accessories, allowing people to visit and enjoy the region's varied landscapes and leisure resources. Owens's Auto Club illustrations pictured an iconic Southern California of Spanish missions, Washingtonia palms, Joshua trees, Monterey pines on the California coast, always with a car placed prominently within the scene. The automobile turned California's coasts, mountains and deserts into *scenery*, landscapes for visual consumption, and Owens's illustrations in the *Los Angeles Times* mapped new routes as they were opened (Fig. 7). The scenic mode of vision encouraged by the newspaper's Motoring and Outdoor



Charles Owens, 'Have yo seen the Pinnacles National Monument?' *Los Angeles Times*, Auto Section. c.1929. This composite image illustrating a 'novel Southland motor trip' was one of scores that Owens produced for the newspaper's leisure and auto sections between 1920 and 1940. The Pinnacles National Monument, in the Sierras east of San Francisco was newly accessible to Los Angeles car drivers by a scenic route of some 312 miles. Owens used sketches and photographic and text inserts overlain on his bird's-eye map to illustrate the road journey.

sections, and by magazines such as *Touring Topics*, might be called a new 'scopic regime', connecting landscape scenery, consumption and speed.⁴⁶ In the words of one cultural critic, 'the term [scenery] is appropriate here, not only because it appears so frequently in the tourist literature of the day but also because of its associations with two other loci of urban visual consumption, theater and film. "Scenic" implies seriality and movement from one visual setting to another, unlike the static connotations of the picturesque'.⁴⁷

This new spatiality stimulated new cartography: not simply the free route maps offered by the gasoline companies but the novel ways of illustrating space, of which Owens and Burke were pioneers. In a 1934 *Los Angeles Times* piece, and in the course of reporting his drive along the newly opened Malibu section of the Pacific Coast Highway, Owens described the unique way of seeing and experiencing space that the automobile permitted: 'a kaleidoscopic view of a city that I somehow remembered as having limits that were coextensive with the horizon'.⁴⁸ The rapidly sketched mobile lines that he developed to capture this modern spatial apprehension are one response, the collage of photographs, topographical sketches, landscape scenes and route map that Owens and Burke used in the Sunday sections of the *Los Angeles Times* and *San Francisco Examiner* are another. These techniques later served to dramatize Owens's war maps.

The association of speed, space and new ways of seeing created by the automobile was even more pronounced in the experience of powered flight, as 1920s Italian Futurist aeropainting dramatically illustrated. Since Southern California was developing as an important centre of aircraft manufacture and air culture in the early twentieth century, the aerial view of landscape was particularly appropriate for negotiating its wide, often uninhabited, desert and mountainous terrain. From early in his career with the *Los Angeles Times*, Charles Owens used aircraft to gain access to places in the desert Southwest, thereby obtaining a new perspective on the rapidly transforming landscape of the area. When he was unable to sketch or photograph personally from an aircraft, he would often base his orthographic landscape drawings and maps on commercial aerial photographs. A ready supply of these was available from entrepreneurial pilots such as Sherman Fairchild and Robert Spence, who in the inter-war years established companies specializing in commercial air photography. If the automobile were both the

generator of Southern California's revolutionary form of sprawling, poly-centred urbanization and the necessary instrument for negotiating modern landscape on the ground, the oblique air photo was particularly suited to capturing its spatial logic. At least one of Owens's pictorial maps of Boulder (Hoover) Dam during its construction was a direct rendering of a high-angle Spence photograph.⁴⁹ By the outbreak of war in 1941, Owens had perfected a cartography for mapping the scale and speed of aerial warfare in the Pacific.

Owens's connections with Los Angeles's iconic modern film industry were less intense than his associations with the automobile and aeroplane, but they were nonetheless close. Not only did he enjoy friendships with Hollywood artists and photographers, but he also undertook at least one project to illustrate the film-making process. This involved time in a studio, carefully observing the complex technical elements that went into motion-picture production. His studio sketches were exhibited at Stanford University in May 1929 and discussed in the *Ladies' Home Journal*.⁵⁰ They reflect a fascination with the moving image that is also apparent in Owens's infatuation with boxing. Owens took ringside seats at boxing matches in order to develop his ability to capture the body in motion and the drama of the fight. It is not difficult, therefore, to understand his fascination with cinema as a uniquely successful way of producing dramatic, mobile images. Like driving and flying, the cinema offers a kinetic spatial experience characteristic of modernity, transforming the possibilities for representing space cartographically. The rapidly pencilled battle scenes on Owens's war maps echo the sparse, dramatic lines of the film storyboard and the ringside sketch.

Southern California's cultural modernity is captured in Owens's action dynamics with their emphasis on technologies of speed and mobility, in the montage format of their graphic architecture, in the collage techniques used in their construction, in the high perspective views, zoom techniques and angle shots that seem to borrow from aerial photography and film making as new ways of seeing and experiencing space and mobility. Owens's work is a modernist cartography for air-age America, not only in its mode of positioning the viewer and its ability to capture speed, but also in its geographical sweep over hemispheres and oceans. Unselfconscious and self-taught, Owens's popular cartography nonetheless illustrates how graphic techniques similar to those pioneered by

Modern artists only marginally interested in the map were in fact perfectly suited to mapping the spatiality of a wholly twentieth-century landscape in Southern California and a contemporary space of war in the Pacific.

Cartographic Art in the 20th Century

While the idea that cartography has progressed historically from art to science was effectively expunged in the late 1980s, epistemological distinctions between art and science in mapping have remained relatively unexamined, and twentieth-century relations between the two practices are unexplored. In the past decade, thinking in Science and Technology Studies has tended to dissolve epistemological distinctions between art and science and to highlight the aesthetic role played by scientific images, including maps, in securing science's truth claims. At the same time, Modern artists have rejected aesthetics as the defining feature of their work, distinguishing art rather on the basis of practice, which may be imaginative, creative, provocative and exploratory—all features art shares with science. In accepting these arguments, I am suggesting that in order to explore the relations between art and cartography in the modern period we should shift attention away from the map itself and towards the process of mapping and consider the ways in which maps are deployed in both scientific and artistic projects.

During the twentieth century, when the divorce of art and science seemed most complete, we discover a continuous but complex conversation between art, science and cartography taking place. It is best understood in terms of actual artistic practices and the changing technologies of space and movement generated by science and technology, rather than through universal definitions of 'art' and 'science'. Over the course of the century, avant-garde artists consistently distanced their work from the narrow embrace of aesthetics and used scientific and technological advances—including those in cartography—for a variety of imaginative, creative and critical ends. As mapping technologies and spatial referencing became even more important in contemporary life, this artistic interest increased. This suggests not so much that we dissolve the distinction between art and scientific cartography, as that we acknowledge its rhetorical force and implications in the context of actual practice.

One of the map types that attracted particular critical attention among twentieth-century artists

was the high-angle oblique pictorial map, which was widely used in tourist guides to the city. Such maps incorporated various aspects of modernity: the new spatial perspectives introduced by powered flight, the scale and logic of contemporary spaces that are comprehensible only from above, the synoptic vision of modern state power, and twentieth-century mass culture of which tourism is an expression. While not necessarily constrained by rubrics of scientific cartography, these maps drew on the authority that professional cartography has gained in modern society, thereby attracting the criticism of avant-garde artists.

In contrast to avant-garde criticism, less theoretically informed popular artists such as Richard Edes Harrison and Charles Owens actually favoured synoptic pictorial cartography, using orthographic maps and bird's-eye views to educate a mass public about the novel spatial relations of modern warfare. Seeking to map the spatialities of modernity introduced by the automobile and the aeroplane, they turned to the technologies of aerial photography and cinema as well as to contemporary artistic techniques such as collage and montage. Owens, particularly, transformed the pictorial map into a dynamic image of mid-twentieth century spatial relations in both the landscape of Southern California and the theatre of war in the Pacific. But these more popular maps also relied for their success as artistic projects on widespread cartographical literacy and the social authority of mapping achieved by professional cartographers.

Scientific cartography claimed ascendancy during the twentieth century, and its practitioners fretted over the potential deceptions of creative, pictorial and decorative mapping, which were indeed cynically exploited in totalitarian states. Meanwhile, a subordinate but significant strand within both avant-garde and popular modern art nurtured and renovated the long historical connections between art and cartography. It did so in consciously political ways that, with hindsight, we might argue laid the foundations for critical engagements today that challenge the stature of both.

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2. Ronald Rees, 'Historical links between cartography and art', *Geographical Review* 70 (1980): 60–78; Samuel Y. Edgerton, *The Renaissance Rediscovery of Linear Perspective* (London, Harper and Row, 1976); Juergen Schulz, 'Jacopo de 'Barbari's view of Venice: map making, city views and moralized geography before the year 1500', *Art Bulletin* 60 (1978): 425–74; Svetlana Alpers, *The Art of Describing: Dutch Art in the Seventeenth Century* (Chicago, University of Chicago Press, 1980).
3. See note 1.
4. See the report by Dennis Reinhartz in *Imago Mundi* 42 (1990): 119; also Catherine Delano Smith, 'Maps as art and science: maps in sixteenth century Bibles', *Imago Mundi* 42 (1990): 65–83.
5. David Woodward, 'Introduction', in Woodward, *Art and Cartography* (see note 1), 1.
6. Throughout this essay my use of the term 'modern' (and thus early-modern and pre-modern) refers to the historical period between the early 15th and late 18th centuries: early Renaissance to Enlightenment in Europe. In my discussion of the Modern period in art ('Modernism'), I am referring to 20th-century, self-conscious movements in the art world that start with Cubism and end in the 1960s with Conceptual and Postmodern art. Throughout this essay the second use is in upper case to clarify this distinction.
7. Matthew H. Edney, 'Cartography without progress: reinterpreting the nature and historical development of mapmaking', *Cartographica* 30:2–3 (1993): 54–68.
8. Woodward, *Art and Cartography* (see note 1), 6. The neurological distinction, which is the reason I call Woodward's argument essentialist, is based on 'brain lateralization studies of so-called right- and left-brain thinking'.
9. Lorrain Dalston and Peter Galison, 'The image of objectivity', *Representations* 40 (1992): 81–128; Steven Shapin, 'Placing the view from nowhere: historical and sociological problems in the location of science', *Transactions of the Institute of British Geographers* 23 (1998): 5–12; David Livingstone, *Putting Science in Its Place: Geographies of Scientific Knowledge* (Chicago, University of Chicago Press, 2003).
10. Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA., Harvard University Press, 1999). Latour regards an 'immutable mobile' as a vehicle for transferring through space scientific information gathered at a specific site in a way that preserves, through the unchanging nature of the vehicle, the validity of that information. The map is a paradigm example.
11. On questions of 'virtual space,' presence and distance, see Carlo Ginzburg: *Wooden Eyes: Nine Reflections on Distance*, transl. Martin Ryle and Kate Soper (New York, Columbia University Press, 2001). 'Virtual space' is a term initially used by Susanne Langer, *Feeling and Form: A Theory of Art* (New York, Scribner, 1953), to describe the space created by an art work. Walter Benjamin's concept of 'aura' as something pertaining to an original artwork lacking in even the most perfect reproduction deals with the same phenomenon and has had considerable influence in the theory and practice of site-specific and performative art in recent years. For the use of such ideas in contemporary art, see
- Miwon Kwon, *One Place after Another: Site-Specific Art and Locational Identity* (Cambridge, MA, MIT Press, 2002).
12. Bruno Latour, 'How to be iconophilic in art, science and religion?' in *Picturing Science, Producing Art*, ed. Caroline A. Jones and Peter Galison (London, Routledge, 1998), 425.
13. *Ibid.*, 423.
14. Barbara Maria Stafford, *Voyage into Substance: Art, Science, Nature and the Illustrated Travel Account, 1760–1840* (Cambridge, MA, MIT Press, 1984); *idem*, *Artful Science: Enlightenment, Entertainment and the Eclipse of Visual Education* (Cambridge, MA, MIT Press, 1994); Lorraine Daston, *Wonders and the Order of Nature 1150–1750* (New York, Zone Books, 1998); D. Graham Burnett, *Masters of All They Surveyed: Exploration, Geography—A British El Dorado* (Chicago, University of Chicago Press, 2000); Luciana Martins, *O Rio de Janeiro dos Viajantes: O Olhar Bdeitânico (1800–1850)* (Rio de Janeiro, Zahar Editor, 2001).
15. *Avant garde*, a military term referring to the leading group in an attacking formation, was adopted within French revolutionary and Marxist parlance to define the role of intellectuals and artists in framing revolutionary politics. In Modern art it became attached to the various groups beginning with the early 20th century Dadaists and Futurists whose manifestos for artistic practices that broke decisively with previous, corrupt forms sought to position art as an engaged, revolutionary practice.
16. Bruno Mantura, Patrizia Rosazza-Ferraris and Livia Velani, eds, *Futurism in Flight: 'Aeropittura' Paintings and Sculptures of Man's Conquest of Space* (London, Aeritalia Società Aerospaziale Italiana, 1990).
17. David Atkinson, 'Geopolitics and the geographical imagination in fascist Italy' (unpublished doctoral thesis, Loughborough University of Technology, 1995).
18. James Housefield, 'Marcel Duchamp's art and the geography of modern Paris', *Geographical Review* 82 (1992): 478.
19. Rosalind Krauss, 'Grids, you say', in *Grids: Format and Image in Twentieth-Century Art* (New York, Pace Gallery, 1980), n.p.
20. John Yau: *The United States of Jasper Johns* (Cambridge, MA., Zoland Books, 1996), 34–40.
21. Kevin Lynch, *The Image of the City* (Cambridge, MA., MIT Press, 1960).
22. Guy Debord, quoted in Peter Wollen, 'Mappings: Situationists and/or Conceptualists', in *Rewriting Conceptual Art*, ed. Michael Newman and John Bird (London, Reaktion, 1999), 30.
23. *Ibid.*, 31.
24. *Ibid.*
25. *Ibid.*
26. Michel de Certeau, *The Practice of Everyday Life*, transl. S. Rendall (Berkeley, University of California Press, 1988).
27. Wollen, 'Mappings' (see note 22), 36; Wystan Curnow, 'Mapping and the expanded field of contemporary art', in *Mappings*, ed. Denis Cosgrove (London, Reaktion, 1999), 253–68; Miwon Kwon, 'One place after another: notes on site specificity', in *Space, Site, Intervention: Situating Installation Art*, ed. Erica Suderburg (Minneapolis and London, University of Minnesota Press, 2000), 38–63.
28. Jeremy Millar, 'Ground control', *Tate Magazine* (Summer 1999), 29–33.
29. 'Little' map is the term employed by Catherine Delano-Smith to characterize cheap, generally printed, popular and commercially produced maps of the kind that became an inescapable part of daily life in the 20th century (Catherine Delano-Smith, 'The map as a commodity', in David Woodward, Catherine Delano-Smith

and Cordell D. K. Yee, *Plantejaments i objectius d'una història universal de la cartografia / Approaches and Challenges in a World-Wide History of Cartography* (Barcelona, Institut Cartogràfic de Catalunya, 2001), 91–109.

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31. <www.Princeton.edu/kurgan/spot/kosovo/htm>.

32. Catherine Nash, 'Mapping emotion', *Environment and Planning D: Society and Space* 16 (1998): 1–9.

33. John Pickles, 'Texts, hermeneutics and propaganda maps', in *Writing Worlds: Discourse, Text and Metaphor in the Representation of Landscape*, ed. T. J. Barnes and J. S. Duncan (London, Routledge, 1992), 193–230.

34. Mark Monmonier, *Maps with the News* (Chicago, Chicago University Press, 1989), 14.

35. Susan Schulten, *The Geographical Imagination in America, 1880–1950* (Chicago, University of Chicago Press, 2001), 214–28. Richard Edes Harrison, *Look at the World: The Fortune World Atlas for World Strategy* (New York, Fortune, 1944); Susan Schulten, 'Richard Edes Harrison and the challenge to American cartography', *Imago Mundi* 50 (1998): 174–88.

36. Harrison, in his introduction to *Look at the World* (see note 35), is specific about the significance of his project as a contribution to democratic citizenship.

37. Walter Ristow, 'Journalistic cartography', *Surveying and Planning* 10 (1957): 369–90. Ristow was a close friend of Richard Edes Harrison and his arguments about newspaper cartography have the effect of enhancing the significance of Harrison's work. Ristow's paper has been a principal source for the more recent reviews of 20th-century popular cartography by Monmonier and Schulten.

38. Charles Owens, who is the principal subject of this study, worked between 1910 and 1912 for the *New York Herald* and other New York newspapers and after that at the *Los Angeles Examiner* before joining the *Los Angeles Times* in 1918, where he stayed until his retirement in 1952. Howard Burke is known only for his work as staff artist at the *San Francisco Examiner*, where he was active in the same mid-century years as Owens.

39. The full series of maps is not known and does not appear in the microfilm version of *Los Angeles Times*. An

incomplete but substantial collection of 120 of the original maps is held in the Young Research Library at University of California Los Angeles, and a selection of others, in a poor state of preservation, is kept in the *Times* offices in downtown Los Angeles.

40. Denis Cosgrove, *Apollo's Eye* (Baltimore, The Johns Hopkins University Press, 2001), 243–48.

41. A familiar example is the opening frames of the 1941 film *Casablanca*.

42. Evidence of the complex interaction between war, cartography and art is found also in the biography of conceptual artist Douglas Huebler discussed earlier. Huebler worked as an intelligence officer in the Pacific theatre, flying sorties and using maps to plot the success of bombing missions.

43. *Los Angeles Times*, 4 March 1958.

44. Owens's capacity to recreate landscapes from memory gave him an early reputation as a young reporter when he illustrated the San Francisco earthquake for a New York newspaper with a pictorial map of the city based on wire reports and his personal knowledge alone.

45. John Ott, 'Landscapes of consumption: auto tourism and visual culture in California, 1920–1940', in *Reading California. Art, Image, Identity*, ed. Stephanie Barron et al. (Berkeley, University of California Press, 2000), 51–67, ref. on 52. For ten months in 1923 and again in 1927, Owens's California landscapes and desert scenes were reproduced in full colour on the front cover of *Touring Topics*, the monthly magazine of the Automobile Club of Southern California.

46. Martin Jay, *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought* (Berkeley, University of California Press, 1993), is the originator of this phrase which suggests the close connection between ways of seeing and representing space and broader cultural shifts.

47. Ott, 'Landscapes of consumption' (see note 45), notes 35 and 56.

48. *Los Angeles Times*, 20 May 1934.

49. The photograph and map were published in the *Los Angeles Times* on 1 January 1929. The Spence archive of aerial photographs is currently housed at the Geography Department of UCLA. It consists of some 100,000 photographic negatives and printed images.

50. *Ladies' Home Journal*, July 1930: 51–53.

Cartes, production cartographique et modernité: art et cartographie au XXe siècle

Tandis que l'histoire de la cartographie s'est affranchie des débats stériles sur le statut scientifique et artistique des cartes, l'étude des relations entre art et cartographie a persisté à privilégier largement les cartes pré-modernes, évitant l'étude critique de l'art et de la science en cartographie au XXe siècle et laissant intacte l'impression que ceux-ci suivent des chemins distincts à l'époque moderne. Dans cet article, cependant, je m'appuie sur le travail théorique mené dans le domaine de *science studies* et je tiens compte de la séparation de l'art moderne et de l'esthétique pour suggérer que l'étude de l'art et de la cartographie au XXe siècle devrait privilégier les pratiques de production cartographique plutôt que les cartes en tant que telles. Un aperçu sommaire des mouvements d'art moderne et d'œuvres choisies indique un engagement continu, sinon critique, des artistes d'avant-garde en cartographie, et l'étude d'une production plus populaire, l'image de presse, produite à Los Angeles au milieu du XXe siècle dans le contexte d'une culture de l'image profondément moderne, indique une connection tout aussi étroite entre modernité, art et cartographie.

Kunst, Kartographie und die Moderne im 20. Jahrhundert

Die Geschichte der Kartographie hat sich zwar von den kontraproduktiven Debatten über den wissenschaftlichen oder künstlerischen Rang von Karten befreit, Betrachtungen über die Beziehung

zwischen Kunst und Kartographie beschränken sich aber weiterhin überwiegend auf ältere Karten. Dabei wird eine kritische Prüfung der Interdependenz von Kunst und Kartographie im 20. Jahrhundert vermieden und weiterhin der Eindruck vermittelt, diese entwickelten sich in der modernen Zeit völlig unabhängig. Im vorliegenden Beitrag schlägt der Autor—basierend auf theoretischen Arbeiten auf dem Gebiet der *science studies* und unter Berücksichtigung der Loslösung der modernen Kunst von der Ästhetik—vor, dass der Komplex Kunst und Kartographie im 20. Jahrhundert vor allem anhand der Prozesse der Kartenherstellung untersucht werden sollte und weniger anhand der Karten selbst. Ein Überblick über die Strömungen der modernen Kunst und die Analyse einzelner Kunstwerke lässt eine kontinuierliche, wenn auch kritische Beschäftigung der Avantgarde-Künstler mit der Kartographie erkennen. Darüber hinaus legt auch die Untersuchung populärerer Zeitungsskizzen, die im Kontext mit der ausgeprägt modernen visuellen Kultur von Los Angeles in der Mitte des 20. Jahrhunderts entstanden, eine enge Verbindung zwischen der Moderne, der Kunst und der Kartographie nahe.

Modernidad, arte y cartografía en el siglo XX

Aunque la historia de la cartografía se ha librado de inoperantes debates sobre el estatus científico y artístico de los mapas, las deliberaciones sobre la relación entre arte y cartografía se han centrado principalmente en los mapas históricos, evitando un examen crítico del arte y la ciencia en la cartografía del siglo XX, y dejando intacta la impresión de que seguían distintos caminos en la época moderna. En este artículo he dibujado un trabajo teórico en *science studies* y tomado en cuenta la separación entre el arte moderno y la estética para sugerir que la investigación sobre el arte y la cartografía en el siglo XX debe centrarse en las prácticas cartográficas más que en los mapas en sí. Un repaso sumario a los movimientos artísticos y a algunos trabajos seleccionados, indica un continuado, aunque crítico, compromiso de los artistas de vanguardia con la cartografía; el examen de los mas populares periódicos de arte, producidos en el contexto de la cultura visual moderna de la mitad del siglo XX en Los Ángeles, indica una conexión muy cercana entre modernidad, arte y cartografía

Author's Postscript

Sarah Bendall ('Draft Town Maps for John Speed's *Theatre of the Empire of Great Britaine*', *Imago Mundi*, 54 (2002): 30–45) writes:

'In my article on the collection of plans for the *Theatre* held at Merton College, Oxford, I omitted to mention two details that I know will be of interest to fellow researchers into John Speed's maps. The first is that the plan of Galway is signed 'Hu Fen', and the second is that on the verso is an unsigned plan that appears to represent Coventry.'

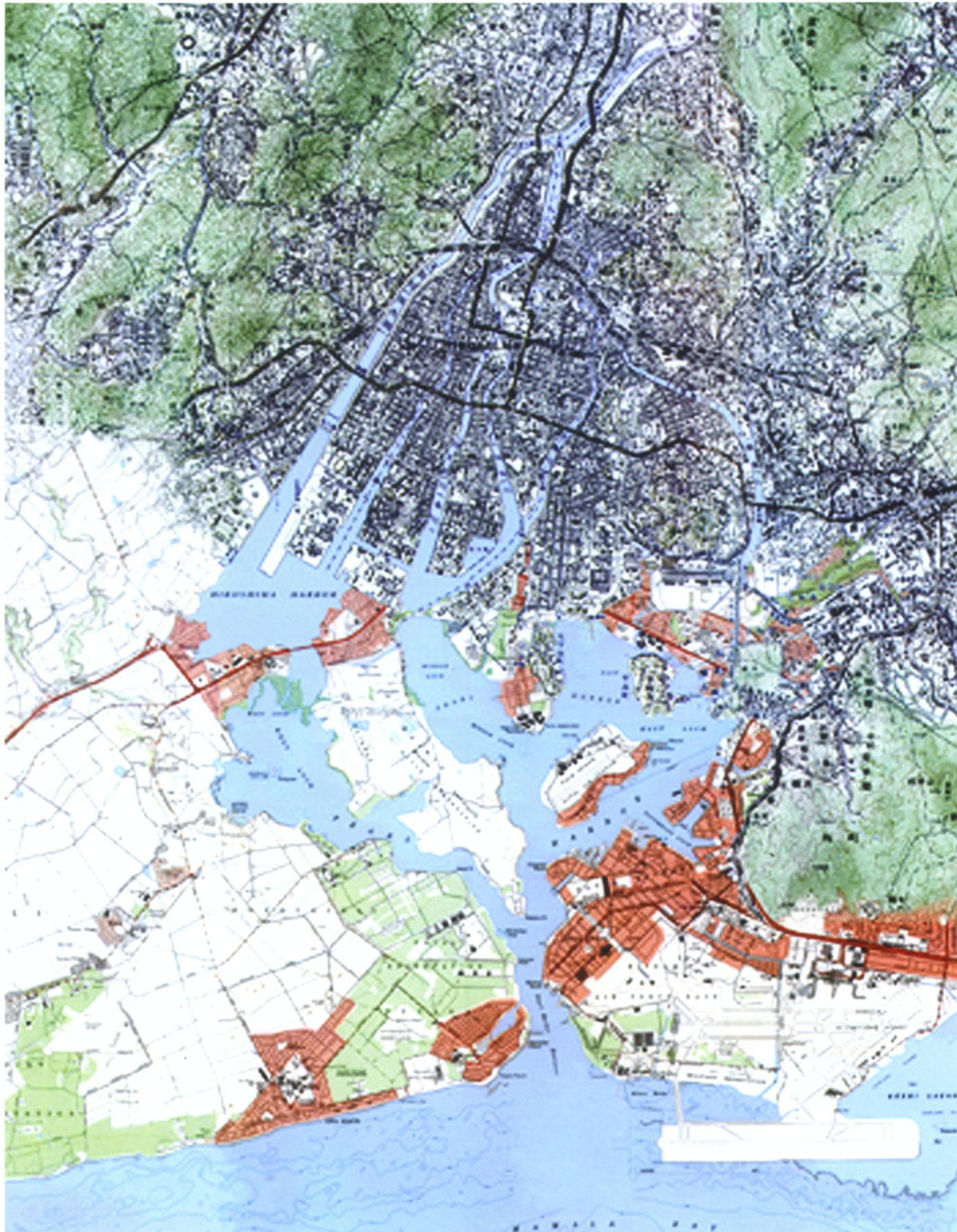


Plate 3. Satori Matoba, *Pearl Harbor/Hiroshima* (1998). Digital print. One of a number of projects that bring together maps of 'different' places into a seamless unity, the Japanese artist here skilfully combines the two separate large-scale topographical maps of Pearl Harbor and Hiroshima harbour so that at first sight they are one place. The impact of uniting, at least cartographically, the iconic locations of the struggle for the Pacific during the Second World War needs no further comment, especially in the context of the maps by Howard Burke and Charles Owens that follow (Plates 4 and 5). (Reproduced with permission of the artist.) See page 43.

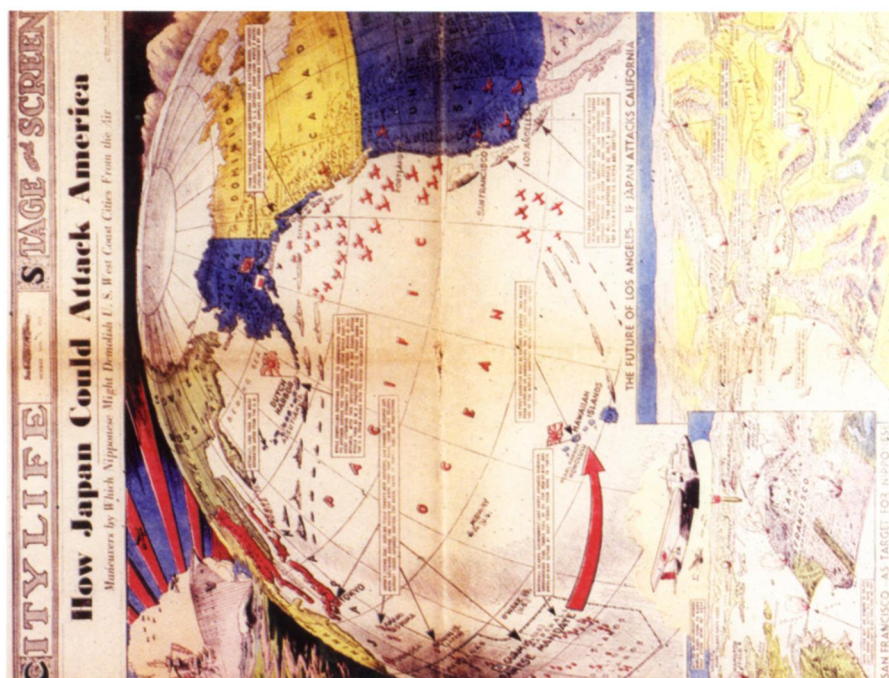


Plate 4. Howard Burke, 'How Japan could attack America', from the *San Francisco Examiner*, 7 November 1937. Burke's full-page, three-colour orthographic map appeared in the Sunday supplement of San Francisco's principal daily newspaper some four years before the Pearl Harbor attack. Text inserts explain strategic possibilities while line-drawn bird's-eye views detail the vulnerability of California's two metropolises to aerial bombardment. The steaming aircraft carrier backed by the rising-sun motif of the Japanese empire in the upper left of the image is a typical device used by Burke and Owens to dramatize the narrative aspects of their maps. See page 46.



Plate 5. Charles Owens, 'Will Hitler drive into Spain in new thrust aimed at Gibraltar?' *Los Angeles Times*, 28 December 1942. One of more than 200 such maps published in the *Los Angeles Times* during the course of the Second World War, this map gives a 'global' perspective over North Africa, Iberia, France and the western Mediterranean to illustrate the threat to Gibraltar after the fall of France. Owens used a cheap schoolroom globe to draw his high-angle perspectives, adding colour, directional arrows and pasted text inserts to explain the strategic implications of the map. See page 46.