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The Writings of Donald Appleyard*

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Introduction

When I began graduate school at Berkeley, Donald Appleyard was the first name on my list of professors to seek out. It was a good lead. Each semester, Don's seminars covered new issues, and his commitment to the exploration of ideas, to planning and architecture, and to his students was unrivaled. I remember most vividly evening meetings at his home, where small groups of students presented their own work for critical review, and where we met Don's friends from all over the country—some of the best scholars in design research. This amorphous field must have crystalized for others besides myself in that context.

It was in the fall of 1982 when the news came of Don's death. The finality of his death seemed irreconcilable with the vital memories we each held. Compiling Appleyard's written work is one way to pass along the influence he had on those of us who knew him. Some twenty years of prolific, scholarly, and creative achievement are evident in the artifact below: Donald Appleyard's bibliography. The intention of publishing this bibliography is to gather the dispersed writings of Donald Appleyard so that his oeuvre is accessible to scholars, researchers, designers, and students. His future research agenda is underscored, so that others may continue the work which Appleyard began.

In order to usher scholars, designers, researchers, and students into the corpus, five categories are used to summarize Appleyard's work. The remarkable breadth of Appleyard's interests is apparent in this list of writings, which range from environmental simulation to street livability; from urban conservation to environmental symbolism. There is, however, a unifying theme in his work which stems from his own philosophy that people and physical place are critically linked in the understanding, evaluation, conservation, or planning of any environment.

Environmental Perception, Environmental Psychology, and the Ciudad Guayana Project (Reference numbers: 1, 2, 24, 29, 30, 32, 37, 38, 49, 56, 57, 79, 80)

Donald Appleyard's work in the 1960s, with Kevin Lynch at MIT and with the Ciudad Guayana project in Venezuela, explores physical form as reflected in human understanding. He focuses on the ways people structure their perceptions of environments and the nature of those mental representations that are influenced not only by the physical setting but also by travel mode, spatial and temporal context, familiarity, and social significance. Dominating these works is the general orientation of cognitive psychology that leads to an understanding of the environment as it is understood by its inhabitants, and to the design of responsive environments. Many of the ideas embodied in these writings can be found in the book Planning a Pluralist City, based on the Ciudad Guayana research.

*A similar version of this bibliography was published in D. Amadeo, J. Griffin, and J. Potter, eds. Proceedings of the 14th International Conference of the Environmental Design Research Association. Washington, DC: 1983.

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In his 1973 article "Professional Priorities for Environmental Psychology," Donald Appleyard set forth a formal research agenda for the field. He felt the overriding priority was to integrate environmental psychology research into the day-to-day design and decision-making processes. The specific areas of research he outlined were: (1) participatory communication bringing more people, particularly non-professionals, into the environmental decision-making process; (2) situational research integrating social science research methods such as interviews and observation into all stages of the architect's design process; (3) comprehensive checklists—detailed studies of the relationship between particular user groups (their needs, values, activities, perception processes) and specific environmental characteristics (surfaces, mass, views, enclosure, lighting, signs, smells) in order to understand the effective and perceived environment of those populations affected by them; (4) simulations and predictions—techniques for authentic, realistic representations of what a proposed environment will be like; and (5) manuals and cookbooks—publications which translate research findings into usable design guidelines for professionals.

Urban Planning, Design, and Conservation (Reference numbers: 3, 4, 6, 7, 8, 10, 15, 17, 22, 23, 25, 34, 77, 84, 86, 87)

In further writings about the urban environment, Appleyard brings an expanded set of concerns, which include not only psychology, but also economics, politics, sociology, and history, to his analysis of extant built and open spaces as well as to the planning of future environments. Appleyard was involved with his own cities, evident in the writings about Boston, Berkeley, and San Francisco. Most recently, he edited The Conservation of European Cities and contributed an eloquent introduction discussing the importance of integrating social and physical conservation in city planning.

Two urban design manifestos that Appleyard co-authored had similar themes: What is wrong with places being designed today?; What are the qualities of good, humanistic, urban environments?; and What design characteristics achieve those qualities? His evaluation was always focused on people's use and perceptions of their environment. The intent was to go on to develop design guidelines based on research for the public spaces of the city.

Neighborhoods, Streets, and Transportation

(Reference numbers: BART—12, 13, 14, 39, 41, 43; Livable streets—5, 11, 16, 18, 35, 44, 48, 54, 63, 75, 76, 81, 83; Transportation environments—26, 27, 28, 33, 45, 46, 65, 66, 85)

Appleyard was interested not only in the city's built and open spaces,

but also in the connections between them—the links, the systems within which we move from place to place. Precipitated in part by a major project for BART (Bay Area Rapid Transit) in California, Appleyard completed a number of studies on transportation networks, traffic, and streets. Each is scrutinized primarily in terms of its impact on the community, especially the neighborhood. A key notion underlying these studies is that the street's livability is central to that of the neighborhood, implying that we must consider transportation networks not only as functional circulation systems, but as living environments in their own right.

Appleyard had recently compiled his work in this area in two publications, a book entitled Livable Streets and a manual for traffic engineers, Improving Residential Streets. In this way he sought to bring his research efforts to bear on public policy and on community action.

The Process of Environmental Planning

(Reference numbers: Berkeley Environmental Simulation Lab— 40, 42, 47, 51, 52, 62, 64, 70, 71; Participatory planning—9, 31, 36, 50, 72, 73)

Another kind of connection that concerned Appleyard was the link between extant and future environments—the planning process itself. His writings cover a range of issues in environmental decision-making, primarily

community participation and visual media as design communication tools. In terms of the latter, Appleyard spearheaded the development of the Berkeley **Environmental Simulation** Laboratory—an immense, intricate system for guiding a movie camera on a probe through small-scale models of environments. He had recently drafted a manuscript with Kenneth H. Craik and Peter Bosselmann, Understanding Environmental Media, reviewing work in the lab and providing a handbook on simulation as a tool in environmental planning.

One of Appleyard's intentions was to present to the public visual simulations of alternatives for actual planning projects. The lab was just beginning to be involved in such activities—preparing a film for public television airing that showed different growth scenarios for downtown San Francisco. The simulator is now being used (as part of the EIR process) to examine in detail how proposed development projects will perform when inserted into the downtown context. Studies cover solar access, wind, and visual impact as viewed by pedestrians, passing drivers, and people looking from a distance at the skyline.

Environmental Symbolism (Reference numbers: 53, 55, 58, 60, 61, 67, 68, 69, 74, 78, 82)

In the last years of Donald Appleyard's life, one interest consumed an increasing share of his curiosity: meaning and social symbolism in the physical environment. He was intrigued by the different connotations palm trees held for Northern versus Southern Californians, by the symbolic importance of place for communities, and by the family home's role as an expression of its inhabitants.

Appleyard's untimely death left unfinished the book planned to coalesce his work in this domain. As Kevin Lynch described in his review of the unfinished manuscript (Places I, Number 1) Appleyard was attempting to integrate a broad range of psychological and environmental themes: the formation of individual and societal identities; the expression of identity in the built environment; the landscapes of the local versus the tourist, and the issue of authenticity; the communication of status and power in the built environment; public places as theaters of social conflict; and as a summary the notion of a healthy place identity. The work sets forth a great deal of new thought on these subjects and, more important, raises many questions for others to pursue.

The citations below are organized first by the type of publication, next by year of publication, and then alphabetically. The majority of entries come from Appleyard's own vita, and from a bibliography compiled by his friend and colleague, Kenneth H. Craik. The majority of writings are obtainable,

while some are only available in select libraries (the Rotch Library at MIT and the Library of the College of Environmental Design at the University of California at Berkeley probably have the most complete collections). In addition, TURD distributes reprints of a large number of Appleyard's works for a minimal fee.

Bibliography

Books

- 1. Appleyard, Donald, Kevin Lynch, and John R. Myer. *The View from the Road*. Cambridge, MA: MIT Press, 1964.
- 2. Appleyard, Donald. Planning a Pluralist City: Conflicting Realities in Ciudad Guayana. Cambridge, MA: MIT Press, 1976.
- 3. Appleyard, Donald, ed. *Urban Conservation in Europe and America: Planning, Conflict, and Participation in the Inner City*, 1975 Conference Proceedings of the European Regional Conference of Fulbright Commissions. Rome: 1977.
- 4. ——, ed. *The Conservation of European Cities*. Cambridge, MA: MIT Press, 1979.
- 5. Appleyard, Donald, with M. S. Gerson and M. Lintell. *Livable Streets*. Berkeley, CA: University of California Press, 1981.

Reports and Monographs

6. Appleyard, Donald. Future Form of Santo Tomde, Guayana Project,

77

Venezuela. Cambridge, MA: Joint Center for Urban Studies, MIT and Harvard University, 1962. 7. ——. An Environmental Improvement Program for Metropolitan Boston. Cambridge, MA: Joint Center for Urban Studies, MIT and Harvard University, 1966. -, and Kevin Lynch. Opportunities in Kendal Square. Development Plan for MIT, 1966. 9. Appleyard, Donald, and The Landscape Architecture Department of the University of California, Berkeley. Community Participation in the Planning, Design and Construction of Neighborhood Parks. White Paper for the Academic Senate Policy Committee, People's Park Crisis, University of California, Berkeley, 1969.

10. Appleyard, Donald. Existing Form and Image of San Francisco, Report No. 4. San Francisco, CA: San Francisco Department of City Planning, 1970.

11. ——. Street Livability Study: An Urban Design Study
Background Report. San Francisco, CA: San Francisco Department of City Planning, 1970.
12. Foley, D. L., D. B. Lee, and Donald Appleyard. Social and

Donald Appleyard. Social and Environmental Impacts of the BART System: Needed Research, Highway Research Board Special Report 111. Washington, DC: Highway Research Board, 1970.

13. Appleyard, Donald, and F. Carp. *The BART Residential Impact Study*, The BART Impact Studies Final Report Series, Part II (6 volumes, 2 appendices). Berkeley, CA: Institute of Urban and Regional

Development, University of California, 1973.

14. ——. BART Traveller Environmental Study. The BART Impact Studies Final Report Series, Part II (3 volumes). Berkeley, CA: Institute of Urban and Regional Development, University of California, 1973.

15. Lynch, Kevin, and Donald Appleyard. Temporary Paradise? A Look at the Special Landscape of the San Diego Region. San Diego, CA: City of San Diego, 1974. 16. Appleyard, Donald, M. S. Gerson, and M. Lintel. Livable Urban Streets: Managing Auto Traffic in Neighborhoods. Washington, DC: U.S. Government Printing Office, 1976. 17. Appleyard, Donald. Urban Design and Architectural Policies for Dodoma, New Capital of Tanzania: Review and Proposals. Report for the United Nations, UN-HABITAT, Nairobi, Kenya, 1979. 18. Appleyard, Donald, and D. T. Smith. Improving the Residential Street Environment—Executive

Book Reviews

19. Appleyard, Donald. Review of Kicked a Building Lately?, by A. L. Huxtable. Journal of Aesthetics and Art Criticism 36, no. 1 (Fall 1977).

20. ———. Review of Managing the Sense of a Region, by Kevin Lynch. The Journal of the American Institute of Planners 43, no. 3 (July 1977).

Summary. Washington, DC: Federal

Highway Administration, 1981.

21. — Review of On Streets,

by S. Anderson. *Journal of the American Planning Association* 45, no. 3 (July 1979).

Articles

——, "Metropolitan Boston: 22. — An Environment for Human Development." Issues and Problems of Boston Metropolitan Area Development, Proceedings of Conference Presented to the Metropolitan Area Planning Council, Commonwealth of Massachusetts, in Cooperation with the Urban Renewal Administration Housing and Home Finance Agency, 1965. Cambridge, MA: Joint Center for Urban Studies of MIT and Harvard University, 1965. 23. Appleyard, Donald, and Kevin Lynch. "A Faculty View." In Brower, S., J. Raskell, Y. Hassan, S. Hershdorfer, G. Kurilko, S. Moss, Kevin Lynch, and Donald Appleyard. Signs in the City. Cambridge, MA: MIT Department of City and Regional Planning, 1963. 24. Appleyard, Donald. "Motion, Sequence and the City." In The Nature and Art of Motion, edited by G. Kepes. New York: George Braziller, Inc., 1965. 25. ——. "Experiments in Open Space." Connection, Visual Arts at Harvard (Spring 1966). 26. Appleyard, Donald, and Kevin Lynch. "Esthetic Criteria for Highway Design." In Strategies for the Evaluation of Alternative Transportation Plans, Research Report of the Transportation Center, Northwestern. Evanston, IL: Northwestern University, 1967. 27. Appleyard, Donald. "Signs in

Urban Highways: Messages, Audiences, and Media." *Dot Zero* 5, *Transportation Graphics* (Fall 1968). 28. Appleyard, Donald, and

28. Appleyard, Donald, and R. Okamoto. "Environmental Criteria for Ideal Transportation Systems." In *Guidelines for New Systems of Urban Transportation*, Volume II. Washington, DC: Department of Housing and Urban Development, Barton-Aschman, Inc., 1968.

29. Appleyard, Donald. "City Designers and the Pluralistic City." In L. Rodwin and Associates. *Planning Urban Growth and Regional Development*. Cambridge, MA: MIT Press, 1969.

MA: MIT Press, 1969.
30. ——. "Why Buildings Are Known: A Predictive Tool for Architects and Planners."

Environment and Behavior 1, no. 2 (December 1969). (See also no. 79.)
31. ——. "Elitists Versus the Public's Cry for Help." Landscape Architecture 61, no. 1 (October 1970).

32. ——. "Styles and Methods of Structuring a City." *Environment and Behavior* 2, no. 1 (June 1970). (See also no. 56 and no. 57.) 33. ——. "Social and Environmental Policies for Transportation in the 1970's." Working Paper 161. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1971.

34. ——. "The Future of Landscape Architecture and Environmental Planning—A Personal View." *Landscape Architecture* 61, no. 2 (January 1971).

35. Appleyard, Donald, and M. Lintell. "The Environmental Quality of City Streets: The Residents' Viewpoint." The Journal of the American Institute of Planners 38, no. 2 (March 1972). (See also no. 48 and no. 63.) 36. Appleyard, Donald. "Environmental Planning and Social Science: Strategies for Environmental Decision Making." Working Paper 217. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1973.

37. ——. "Notes on Urban Perception and Knowledge." In Image and Environment: Cognitive Mapping and Spatial Behavior, edited by R. M. Downs and D. Stea. Chicago, IL: Aldine, 1973.
38. ——. "Professional Priorities for Environmental Psychology." In Architectural Psychology, edited by R. Kuller. Stroudsburg, PA: Dowden, Hutchinson, and Ross, 1973.

39. Appleyard, Donald, and F. Carp. The BART Residential Impact Study: A Logitudinal Empirical Study of Environmental Impact. Working Paper 205. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1973.

40. Appleyard, Donald, Kenneth H. Craik, M. Klapp, and A. Kreimer. "The Berkeley Environmental Simulation Laboratory: Its Use in Environmental Impact Assessment." Working Paper 206. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1973.

41. Appleyard, Donald, and F.

Carp. "The BART Residential Impact Study: An Empirical Study of Environmental Impact." In Environmental Impact Assessment: Guidelines and Commentary, edited by T. G. Dickert and K. R. Domeny. Berkeley, CA: University Extension, University of California, 1974.

42. Appleyard, Donald, and Kenneth H. Craik. "The Berkeley **Environmental Simulation Project:** Its Use in Environmental Impact Assessment." In Environmental Impact Assessment: Guidelines and Commentary, edited by T. G. Dickert and K. R. Domenv. Berkeley, CA: University Extension, University of California, 1974. 43. Appleyard, Donald, and M. Abell. "Assessing BART Stations." In Proceedings of the Sixth International Conference of the Environmental Design Research Association. Stroudsburg, PA: Dowden, Hutchinson and Ross, 1975.

44. Appleyard, Donald, and M. Lintell. "Streets: Dead or Alive?" *New Society* 33, no. 665 (3 July 1975).

45. Appleyard, Donald.
"International Efforts and
Neighborhood Traffic Management." In Transportation and Land
Use Planning Abroad,
Transportation Research Board
Special Report 168. Washington,
DC: National Academy of Sciences,
Transportational Research Board
Publications Office, 1976.
(Available as IURD Reprint 136.)
46. ———. "Transportation as
a Social Environment: Can
We Change a Tradition?" In

Transportation Planning for a Better Environment, Volume 1, edited by P. Stringer and H. Wenzel. New York: Plenum Press, 1976. 47. Appleyard, Donald, and Kenneth H. Craik. "Berkeley **Environmental Simulation** Laboratory: A Tool for Transportation Planning." In Social and Economic Factors in Transportation Planning, Transportation Research Record 617, edited by S. L. Lang. Washington, DC: National Academy of Sciences, National Research Council, 1976. (Available as IURD Reprint 155.) 48. Appleyard, Donald, and M. Lintell. "The Environmental Quality of City Streets: The Residents' Viewpoint." In Urban Problems: Psychological Inquiries, edited by N. C. Kalt and S. Zalkind. New York: Oxford University Press, 1976. (See also no. 35 and no. 63.) 49. Appleyard, Donald. "A Planner's Guide to Environmental Psychology: A Review Essay." The Journal of the American Institute of Planners 43, no. 2 (April 1977). 50. — ... "Need Analyses Aid Priority Setting" The Practicing Planner 7, no. 4 (July 1977). 51. ——. "Understanding Professional Media: Issues, Theory, and a Research Agenda." In Human Behavior and Environment: Advances in Theory and Research, edited by I. Altman and J. Wohwill. Volume II, New York: Plenum Press, 1977. 52. Appleyard, Donald, and Kenneth H. Craik. "The

Laboratory: A Resource for Environmental Professionals, Public Agencies, Community Groups and Researchers." Berkeley, CA: Institute of Urban and Regional Development, University of California, 1977. 53. Appleyard, Donald, and L. Fishman. "High Rise Buildings Versus San Francisco: Measuring Visual and Symbolic Impacts." In Human Responses to Tall Buildings, edited by D. Conway. Stroudsburg, PA: Dowden, Hutchinson and Ross, 1977. 54. Appleyard, Donald. "Livable Streets: Protected Neighborhoods." Ekistics 45, no. 273 (December 1978). 55. ——. "Patterns of Environmental Conflict: The Escalation of Symbolism." Working Paper 289. Berkeley, CA: Institute of Urban and Regional Development, 1978. 56. — —. "Styles and Methods of Structuring a City," edited by J. Blunden, P. Hoggett, C. Hammet, and P. Sarre. Fundamentals of Human Geography, New York: Harper and Row; and London: Open University Press, 1978. (See also no. 32 and no. 57.) 57. ——. "Styles and Methods of Structuring a City." In Humanscape: Environments for People, edited by S. Kaplan and R. Kaplan. Belmont, CA: Duxbury Press of Wadsworth Publishing, 1978. (See also no. 32 and no. 56.) 58. ——. "The Environment: Action and Symbol." Working Paper 286. Berkeley, CA: Institute of

Urban and Regional Development,

University of California, 1978.

59. ——. "The Major Public Works of Kevin Lynch: An Appraisal." Town Planning Review 49, no. 4 (Fall 1978). 60. ——. "Urban Trees and Forests: What Do They Mean?" Working Paper 303. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1978. 61. ——. "Urban Trees: What Do They Mean?" Proceedings of the National Urban Forestry Conference, Washington, DC, 1978. 62. Appleyard, Donald, and Kenneth H. Craik. "The Berkeley **Environmental Simulation** Laboratory and Its Research Programme." International Review of Applied Psychology 27 (1978). 63. Appleyard, Donald, and M. Lintell. "Environmental Quality of City Streets: The Residents' Viewpoint, In Humanscape: Environments for People, edited by S. Kaplan and R. Kaplan. Belmont, CA: Duxbury Press of Wadsworth Publishing, 1978. (See also no. 35 and no. 58.) 64. Craik, Kenneth H., Donald Appleyard, and G. E. McKechnie. "Impressions of a Place: Effects of Media and Familiarity among Environmental Professionals.' Berkeley, CA: Institute of Personality Assessment and Research, University of California, 1978. 65. Appleyard, Donald. "Environmental Impacts of Transit Systems." In Public Transportation: Planning, Operations and Management, edited by G. E. Gray and L. A. Hoel. New Jersey:

Prentice-Hall, 1979.

Environmental Simulation

Impacts of Transport Investment." In Proceedings of the Third International Conference on Behavioral Travel Modelling in Tanunda, South Australia, April 1977, edited by D. Henscher and P. Stopher. London: Croom Helm, 1979. 67. --. "Home." Architectural Association Quarterly 11, no. 3 (1979).68. ——. "Inside vs. Outside: The Distortions of Distance." Working Paper 307. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1979. 69. ——. "The Environmental as a Social Symbol: Within a Theory of Environmental Action and Perception." Journal of the American Planning Association 45, no. 2 (April 1979). (See also no. 74 and no. 78.) 70. ——, Peter Bosselmann, R. Kock, and A. Schmidt. "Periscoping Future Scenes: How to Use an Environmental Simulation Lab." Landscape Architecture 69, no. 5 (September 1979). 71. Appleyard, Donald, and Kenneth H. Clark, "Visual Simulation in Environmental Planning and Design." Working Paper 314. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1979. 72. Appleyard, Donald. "Citizen Action in Brussels and Covent Garden." Citizen Participation in Western Europe: Working Papers, edited by L. Susskind, German Marshall Fund Conference Proceedings, April 1980.

66. ——. "Environmental

73. ——. "Citizen Participation in Street Management: Delft, Camden, and Britain." In Citizen Participation in Western Europe: Working Papers, German Marshall Fund Conference Proceedings, edited by L. Susskind. April 1980. 74. ——. "L'Architettura Come Un Symbolo Sociale." Spazio e Societta 11 (1980) (See also no. 69 and no. 78.) 75. ——. "Liveable Streets: Protected Neighborhoods." Annals of the American Academy of Political and Social Science 45 (September 1980). 76. ——. "Streets Can Kill Cities: Third World Beware!" Working Paper 336. Berkeley, CA: Institute of Urban and Regional Development. University of California, 1980. 77. ——. "The Delicate Process of an Outsider's Review: Dodma, Capital of Tanzania." Landscape Architecture 70, no. 3 (May 1980). 78. ——. "The Environment as Social Symbol: Within a Theory of Environmental Action and Perception." Ekistics (Spring 1980). (See also no. 69 and no. 74.) 79. ——. "Why Buildings Are Known: A Predictive Tool for Architects and Planners." In Meaning and Behavior in the Built Environment, edited by G. Broadbent, R. Bunt, and T. Llorens. New York: Wiley, 1980. (See also no. 30.) 80. Craik, Kenneth H., and Donald Appleyard. "Streets of San Francisco: Brunswik's Lens Model Applied to Urban Inference and Assessment." Journal of Social Issues, 36, no. 3 (1980). 81. Appleyard, Donald. "A Plan for

Liberating Streets." California Living Section of the San Francisco Examiner (April 1981). 82. ——. "Place and Non-Place: The New Search for Roots." In The Land Use Policy Debate in the United States, edited by I. I. deNeufville. New York: Plenum Press (1981). 83. ——. "Systemwide Concepts for Residential Traffic Management." In Creating Livable Cities, edited by N. Pressman. University of Waterloo (1982). 84. ——. "Three Kinds of Urban Design: And More." Urban Design Education, edited by A. Ferebee. Institute of Urban Design, 1982. 85. Appleyard, Donald and Peter Bosselmann. "Urban Design Guidelines for Street Management." Working Paper 385. Berkeley, CA: Institute of Urban and Regional Development, University of California, 1982. 86. Appleyard, Donald, and A. Jacobs. "Hacia un Manifesto Sobre Diseno Urbano," Intorno 1, no. 1 and no. 2 (April 1982). (See also no. 87.) 87. — ... "Towards an Urban Design Manifesto." Working Paper 384. Berkeley, CA: Institute of Urban and Regional Development, 1982. (See also no. 86.)