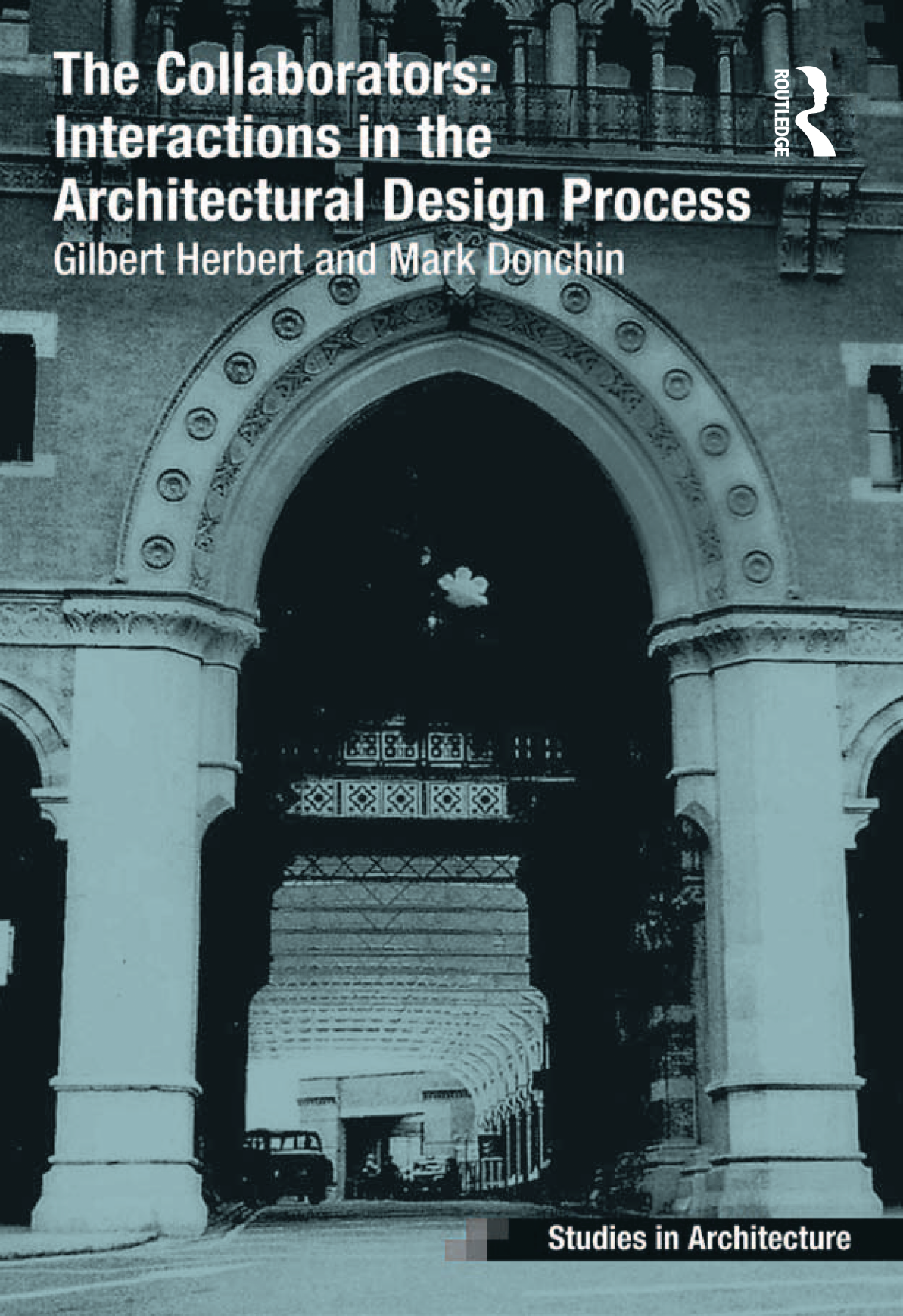
The Collaborators: Interactions in the Architectural Design Process

Gilbert Herbert and Mark Donchin

ROUTLEDGE



Studies in Architecture

THE COLLABORATORS: INTERACTIONS IN THE ARCHITECTURAL DESIGN PROCESS

Ashgate Studies in Architecture Series

SERIES EDITOR: EAMONN CANNIFFE, MANCHESTER SCHOOL OF ARCHITECTURE,
MANCHESTER METROPOLITAN UNIVERSITY, UK

The discipline of Architecture is undergoing subtle transformation as design awareness permeates our visually dominated culture. Technological change, the search for sustainability and debates around the value of place and meaning of the architectural gesture are aspects which will affect the cities we inhabit. This series seeks to address such topics, both theoretically and in practice, through the publication of high quality original research, written and visual.

Other titles in this series

Architect Knows Best
Environmental Determinism in Architecture Culture from 1956 to the Present
Simon Richards
ISBN 978 1 4094 3922 6

Nationalism and Architecture
Edited by Raymond Quek and Darren Deane, with Sarah Butler
ISBN 978 1 4094 3385 9

The Political Unconscious of Architecture
Re-opening Jameson's Narrative
Nadir Lahiji
ISBN 978 1 4094 2639 4

Forthcoming titles in this series

The Dissolution of Place
Architecture, Identity, and the Body
Shelton Waldrep
ISBN 978 1 4094 1768 2

Building Apartheid
On Architecture and Order in Imperial Cape Town
Nicholas Coetzer
ISBN 978 1 4094 4604 0

The Collaborators: Interactions in the Architectural Design Process

Gilbert Herbert
Emeritus Professor of Architecture and Town Planning, Technion, Israel Institute of Technology, Haifa, Israel

and

Mark Donchin
Architect and City Planner, Los Angeles, California, USA

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2013 by Ashgate Publishing

Published 2016 by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN
711 Third Avenue, New York, NY 10017, USA

Routledge is an imprint of the Taylor & Francis Group, an informa business

British Library Cataloguing in Publication Data
Herbert, Gilbert.
The collaborators : interactions in the architectural design process. -- (Ashgate studies in architecture)
1. Architectural design--Case studies. 2. Group work in architecture. 3. Architects and engineers. 4. Interprofessional relations.
I. Title II. Series III. Donchin, Mark.
720.6'8-dc23

The Library of Congress has catalogued this printed edition as follows:
The collaborators : interactions in the architectural design process / by Gilbert Herbert and Mark Donchin.
pages cm. -- (Ashgate studies in architecture)
Includes bibliographical references and index.
ISBN 978-1-4094-5504-2 (hardback)
1. Communication in architectural design. I. Herbert, Gilbert. II. Donchin, Mark.
NA2750.C653 2013
720--dc23

2012035707

ISBN-13: 9781409455042 (hbk)
ISBN-13: 9781315614816 (ebk)

Contents

This page has been left blank intentionally

List of Figures

This page has been left blank intentionally

Acknowledgements

CHAPTER 1: GILBERT HERBERT

The research for this study was undertaken in England in 1992 while on sabbatical leave from the Technion: Israel Institute of Technology. It was made possible with the aid of a research grant deriving from the Mary Hill Swope Chair in Architecture, of which I was then the incumbent. The first draft of a paper was written in 1993, when I was Visiting Professor at the University of Natal, Durban, and revised in 1994/1995. The assistance of both these Universities is gratefully acknowledged. The paper appeared in the *Journal of Architectural and Planning Research,* 15:3, 1998, Locke Science Publishing Company, Inc., Chicago, and we thank the publishers of that journal for permission to reprint the article here.

In our account, I make reference to the lack of primary sources in connection to both Barlow's design of St. Pancras Station and the architectural competition for the Midland Hotel. My search for relevant information was comprehensive, and was conducted in the following libraries and archives: the Barrie Biermann Architectural Library and the History of Technology Library, both of the University of Natal; the Elyachar Library, Technion, Haifa; British Rail Archives, York; Institution of Civil Engineers Library and Archives, London; Ironbridge Gorge Museum; Marylebone Library Local History section, London; Ove Arup Partners Library (courtesy Sir Jack Zunz); Public Record Office, Kew; Raistrick Collection, University College, London; Royal Institute of British Architects Library and Drawings Collection, London; Westminster Public Library, London.

CHAPTER 2: GILBERT HERBERT AND MARK DONCHIN

The substantive basis of this chapter appeared, under the same name, as Working Paper 1998/1 of the Architectural Heritage Research Centre, Technion, but has subsequently been amended in several respects, and includes additional illustrations. Research was carried out both individually and jointly by the authors,

most significantly in a period spent together in Chicago. We owe our gratitude to the archives and libraries which facilitated our research, notably the Roosevelt University Archives, Chicago; Burnham Architectural Library, Art Institute of Chicago; Newberry Library, Chicago; and the Azrieli Architectural Library, Technion, Haifa. In the course of our research we consulted many helpful individuals, including Timothy Samuelson of the Commission on Chicago Landmarks and Bart Swindall of the Auditorium, who helped us contact James Scott, author of the dissertation *Auditorium: The Story of the Construction of Adler & Sullivan's Great Chicago Auditorium*. We also had useful exchanges with Charles Gregersen, author of the report on the Auditorium in the Historic American Buildings Survey, and Thomas Vreeland.

CHAPTER 3: GILBERT HERBERT

The research on which this chapter is based was carried out over a long period of time together with my valued research associates: Architect Silvina Sosnovsky (the history of Haifa, the later buildings of the Palestine Electric Corporation—PEC); Dr. Ita Heinze-Greenberg (Mendelsohn, the early buildings of the PEC); and Dr. Liliane Richter (the relationship of Mendelsohn and Wijdeveld). The publications resulting from that collaboration include Herbert and Sosnovsky, 1993; Herbert and Heinze-Greenberg, 1996; Herbert, Heinze-Greenberg and Sosnovsky, 2003; and Herbert and Richter, 2008 (for details see bibliography). Some of the present text derives from passages written by me in those books. The concept of this chapter comes from two conference papers: 'The Power Struggle', which I presented at the American Society of Architectural Historians 48th Annual General Meeting, Seattle, in April 1995, and 'The Clash of the Titans', at a seminar held at the Technion in April 2009.

The research was carried out in many libraries and archives, and I thank these organizations for their cooperation. They include the Elyachar Library, Technion; Azrieli Architectural Library, Technion; Architectural Heritage Research Centre, Technion; Central Zionist Archives, Jerusalem; Kunstbibliothek Berlin; Getty Research Institute, Los Angeles; Bouwcentrum, Rotterdam; and Nederlands Architectural Institute, Rotterdam.

CHAPTER 4: GILBERT HERBERT

I am the sole survivor of the team which designed the John Moffat Building, and I have no corroborating voices to back up my selective and possibly faulty memory of events long past. In support of my narrative of what happened fifty years ago I have relied on contemporary published accounts, unpublished reminiscences, later publications, the Minutes of the Building Committee, and selected correspondence in the University archives. Despite strenuous efforts I was unable to find any sketches or more formal drawings to help in reconstructing the design history

of the building. In my search for sources, I received valued advice and logistical assistance from the University of the Witwatersrand, and I would like to express my thanks to Professors Randall Bird, Katherine Munro and Paul Kotze, the librarian Janie Johnson and staff of the Martienssen Library, and the staff of the University Archives. For biographical material I am indebted to the Artefacts website, with extracts from electronic documents lodged by Joanna Walker, in the Department of Architecture, University of Pretoria. My thanks also go to my former colleague and old friend Herbert Prins, and to Mira Kamstra Fassler. Finally, my gratitude goes to my wife Valerie, not only for her constant support and encouragement during the preparation of this manuscript, but especially for the research she carried out in Johannesburg on my behalf, during my recent illness.

CHAPTER 5: MARK DONCHIN

I wish to thank Dr. G. Juri Komendant and the colleagues, employees, and students of Louis I. Kahn for sharing with me their time, memories, and observations, which have so greatly enriched the content of this chapter. William Whitaker and Nancy Thorne of the Kahn Archive at the University of Pennsylvania welcomed me and helped in the assemblage of documents and illustrations. I greatly benefited from the constructive comments of Dr. Patricia Cummings Loud, Thomas Vreeland, Anthony Harris, Emile Spira, and Carlo Ferretti, and I wish to express my special gratitude to my dear teacher, friend, and nonpareil collaborator Professor Gilbert Herbert for his initiative, diligence, and leadership.

This page has been left blank intentionally

Foreword

'Firmitas', 'utilitas', 'venustas', those three seminal precepts proposed by Vitruvius, later more colloquially articulated by Wotton as 'Commodity', 'Firmness' and 'Delight', have been the underpinning principles whereby the designers of our built environment have, or at least should have, created the world in which we now live. We know of course that while striving to achieve excellence in these lofty aims, it is not always easy to give each equal consideration. And therein lies the rub!

In former days, certainly until the eighteenth century, the designer, whether mason, carpenter, architect, engineer, supported by skilled and experienced craftsmen, could design and control construction. This meant that the three precepts were, in general in the hands and within the expertise of one individual.

With the advent of the Industrial Revolution the knowledge base widened inexorably and with it the birth and growth of learned societies which fostered the development and sharing of knowledge of its members as well as their welfare and interests. In Britain the Institution of Civil Engineers, founded in 1818, was probably the first. It counted architects as well as engineers of all disciplines among its membership. But soon after the architects went their own way with the founding of the Royal Institute of British Architects in 1834, while Stephenson's exclusion from the Institution of Civil Engineers resulted in the origins of The Institution of Mechanical Engineers in 1847, The Institution of Electrical Engineers was founded in 1871 followed by many others, so that by the mid twentieth century there was a plethora of professional and allied institutions and societies participating and involved with matters concerning the built environment and more particularly with architecture. Practitioners in each discipline developed, researched and widened their knowledge base, not always in harmony with, or for that matter communicating with, those practicing allied professions. By the middle of the twentieth century overlaps in expertise between those who specialised in one or a combination of all or part of 'Commodity or Firmness and Delight' began to be obvious, yet not particularly well articulated or confronted.

It can be argued that by the middle of the twentieth century trends in architecture, generally described as the Modern Movement, were the dominant generators which resulted first in engaging with, then positively involving, the creators of contemporary technology in its genesis and execution. There was, and is, logic and hence an element of inevitability about this process but it would be wrong to argue that the process was, or for that matter is, an easy one. Entrenched professional attitudes and procedures run deep. In reality, historical, educational and above all human factors continue to make seamless integration of 'Commodity, Firmness and Delight' challenging.

Arguably Ove Arup, although an engineer by training and practice, articulated the process of integrating art and architecture with the realities of technology and construction more effectively than most, probably because he practiced what he preached. A recent publication 'Ove Arup, Philosophy of Design'[1] lists a series of essays and speeches he made between 1942 and 1981 some of which go to the heart of the issues examined in the five essays of this book.

The five case studies examined in 'The Collaborators' span a century and bring to life the challenges, the problems and above all the human dimension and dynamics extant in the creation of architecture, used here in the widest sense of the word. But, before the trained professionals can exercise their skills, the role of the client, the promoter, the patron, whether an individual or a corporate body, is the ultimate generator of good design. Unless there is a client-based desire for excellence, everything that follows is at best a result of altruistic endeavour on the part of the designer, or more likely mediocrity or worse. Gilbert Herbert's essay on the Haifa Power Station is interesting in that it exposes the problem, if not the solution.

The challenging thread running through these five essays is on 'means', not 'ends'. Is there a place for the 'Gropian' collective approach or is a firm singular hand on the tiller the only way to build well? There will probably never be a definitive answer. While there are many variables—including the size and nature of the project and its complexity, the overarching driver is 'people'. 'People', person or persons charged with the commission are the determining factors in the design and execution of the project. Some of us want to be alone and are uncomfortable with company when we are doing our work. Others thrive on the dynamics and interaction when in constant communication with kindred spirits. There can be little argument that at the stages when concept and creative ideas become firm and real and have to be turned into bricks and mortar, that direction with a capital 'D' is necessary. But the creative, the conceptual process is much more fragile and requires sensitive leadership whether singular or multi-headed.

There is the worthy contemporary penchant for efficiency and economy and which often harnesses our ever more pervasive electronic gadgetry as generator, to impose 'systems' into our lives and its problems. Systems have their place and are very necessary, but like all engines, they should be regulated or driven by people and it is the people who control them who eventually determine the quality of the outcome. And nowhere is this more appropriate than in the design of our built environment. The production of working drawings and of course construction

itself demands a seamless economy of means. We have made great progress in managing these processes logically and efficiently. But ultimately the quality of the outcome is dependent on the calibre of the designers.

The five essays in this book paint a series of canvases which are instructive to students and practitioners alike. In the context of our twenty-first century world with its burgeoning population, reduction in natural resources, climate change, the challenges facing designers of the built environment are greater than ever. The need for collaboration of all of the designers who create the world around us, and the integration of all the complex issues which go with our ever widening knowledge base, while obvious, still presents a formidable challenge. Above all we need to understand, manage and control the nature of the human interactions taking part in creating 'Commodity, Firmness and Delight'.

The five case studies here provide snapshots of the problems we face. It is only by comprehending past triumphs, trials and tribulations and learning from them that we can begin to understand, let alone solve some of our current and future challenges with confidence.

Sir Jack Zunz

NOTE

1 Ove Arup, *Philosophy of Design Essays 1942–1981*, edited by Nigel Tonks (2012).

This page has been left blank intentionally

Introduction:
Players in the Design Process—Three Essays

In this book we deal with five case studies of collaboration in the architectural design process, over a period ranging from the mid-19th century to the mid-20th century. The examples chosen, located in England, the United States, Israel and South Africa, are of international scope. They have intrinsic interest as works of architecture, and illustrate all facets of collaboration, involving architects, engineers and clients. The individuals involved include such iconic architects as Adler and Sullivan, Erich Mendelsohn and Louis Kahn. In order to set the theoretical stage for these case studies we present three introductory essays which discuss in general terms some significant modalities of collaboration in the design process. They deal with the organizational implications of partnerships, associations and teams; the nature of interactions between architect and engineer; and cooperation and confrontation in the relationship between architect and client.

PARTNERSHIPS, ASSOCIATIONS AND TEAMS

Mark Donchin

Because only the smallest commissions can be designed and supervised by a single architect, professional cooperation, which brings together different specialties and expertise, enables two or more individuals to create buildings of greater size and complexity. In this book we look at two very different cooperative professional structures. In studying the design of the John Moffat Building in Johannesburg (Chapter 4), we scrutinize the establishment and operations of an ad hoc team of independent architects for a specific and unique project. On the other hand, in dealing with Adler and Sullivan's role in the design of the Auditorium Building in Chicago (Chapter 2) we confront the problem of an established partnership of two partners with very different skills, design interests and talents.

Architects can interact as employer or employee in a sole proprietorship, or as partners with divided responsibilities in design, planning, production of working

drawings, office administration, construction, marketing, and other functions. The corporate practice of large firms, which relies on bureaucratic features and the segmentation of professional knowledge, can comprise multiple teams of designers, engineers, and production specialists under the aegis of both a chief designer and project administrator. The mode of organization usually encompasses departments, project teams, studios, or a combination of these methods. Senior designers oversee the work of subordinates who are often assigned to provide alternative proposals and more detailed schemes, and job captains supervise the more technical professional work such as detailing and the writing of specifications. Associations of firms are also common when the location or size of a project, the specialization of firm capabilities, or other circumstances suggest a joint venture. Teamwork, which demands a range of talent and expertise, conjoins individual capabilities with the requirements of the task at hand and necessitates close coordination with fellow architects, engineers, and consultants. Leadership and management capability are prerequisites for effective teamwork. Because the approach of many of the consultants arises from a dissimilar education and professional culture the patina of unity that overlays the joint work of a team may sometimes conceal a disappointment with the ideology, working methods, presumed superior status, and even remuneration of other members. Despite the possibility of misunderstanding, the joint efforts of a team are essential to the completion of the work, and the assemblage of members who share a common enthusiasm and desire for involvement contribute greatly to the success of the enterprise.

The scale and prominence of the large firms have transformed architectural practice by increasing the fragmentation of job roles, instituting the rites and routines of bureaucratic organization, and reducing the architect's sphere of independence within a division of labour defined by the organization chart. Although the benefits of a career as a self-employed practitioner are still attainable, the new mode of dealing with the increased scale of corporate and public commissions by means of large firms composed of a hierarchy of partners, associate partners, and salaried employees has for several decades constituted an increasingly large segment of architectural practice. Chief among its detractors was Walter Gropius (1883–1969), the eminent German-born architect and educator at the Bauhaus and Harvard, who opposed this mode of organization with several lines of argumentation (Gropius 1955). Emphasizing individual freedom of initiative and exhibiting an unusual degree of insight and sympathy he describes the 'plight of young architects as they leave school and enter into practice. I have seen them make valiant attempts to establish themselves independently, and I have seen them more often resign themselves to work indefinitely as draftsmen in large offices which offer little or no chance of exercising individual initiative. It is sad to see so much youthful energy and talent dry up by the slow attrition of our more and more centralized working system.' One principal cause of the prevalence of autocratic direction is the ideology of the 'individual genius as the only embodiment of true and pure art' and the 'work of the egocentric prima donna architect who forces his personal fancy on an intimidated client, creating solitary monuments of individual

esthetic significance.' In addition, Gropius (1966) declares that 'The conception of the architect as a self-sufficient operator who, with the help of a good staff and competent engineers, can solve any problem is isolationist in character and will be unable to stem the tide of uncontrolled disorder engulfing our living spaces.' The concern for a wholesome and productive work environment for the individual architect suggests a philosophy of architectural education that emphasizes training in teams in order for the student to learn methods of collaboration. Such training, Gropius (1955) writes, enables students to engage in their future work with 'active collaborators whose cooperation symbolizes the cooperative organism of what we call society' and to become 'coordinators of the many individuals involved in the conception and execution of planning and building projects.' Experience has taught Gropius that successful methods of collaboration and continuous mutual interchange curb the natural vanity of the individual and displace personal ambitions. Other benefits for the individual include the exposure of his ideas to the stimulating and challenging critique of members of his collaborative team and the consequent maturation of his own work. The team keeps him 'resilient and flexible and develops his stature and performance under the cross-fertilization of different minds.' (Gropius, 1966) Gropius believes that individual talent will assert itself quickly in such a group and that leadership depends not only on innate talent but on one's intensity of conviction and devotion to serve.

In 1945 Gropius and seven young Harvard and Yale graduates founded The Architects Collaborative, a firm with a stated purpose of instituting the collaborative process to achieve a design consensus of team members without sacrificing the individual identity of the architects involved in the conception and execution of the firm's varied projects. In consonance with its social ethos the firm indeed incorporated democratic procedures and an egalitarian mode of compensation and profit sharing, but the partners found that not all of their idealistic tenets were possible of implementation within the constraints imposed by their desire to maintain the firm's viability in the context of American architectural practice. They found, for example, that in order to safeguard design integrity the right of making final decisions, after taking the ideas and criticisms of other team members into consideration, had to remain in the hands of the individual partner responsible for a specific project. Moreover, even though the work was to be executed by generalist architects who possessed a similar panoply of skills a need for a more narrow concentration of areas of expertise gradually introduced specialization among the associates. In retrospect, the partners were gratified by the success of their collaborative process even when compromised, for they felt that the security engendered by group acceptance enabled team members to devote their entire energy to the production of the best possible work instead of on pointless competition. As partner Louis A. McMillan wrote twenty years after the firm's founding, 'The members of the group realize that the welfare of one is the welfare of all, and this discourages jealousy, competition, and feelings of inadequacy and insecurity' (Gropius, 1966). Sarah P. Harkness, another founding partner, pointed out as well that 'rivalry may lead to irrational design; it may put aside a direct solution in favor of a more sensational one' (Gropius, 1966).

After team members with comparable skill levels are selected for a particular project it is apparent that among the prerequisites for a successful collaborative effort are such attributes as persuasive capability, willingness to listen to and accept alternative viewpoints, ability to anticipate possible problems, desire to search for fresh solutions, and respect for the virtues of others and toleration of their fallibilities. In architectural collaborations, common assumptions, values, and admiration for prototypes reinforce group norms, but a correct balance is still required between uniformity and diversity for the steps in the collaborative process to lead to the most productive outcome. In the best of collaborative endeavors, the tension inherent in a variety of perspectives can generate a chain reaction of ideas and an innovative solution that affirm Gropius's claim that the whole of the contributions of individual members can indeed be greater than the sum of the parts. The unfamiliarity of generating a shared design through collaborative efforts often necessitates learning what, for many, is a novel process of problem solving. Management of the actual process, thoughtful planning, and organization help to create the appropriate conditions for success. It is important that agreement be reached about roles and responsibilities and the time frame for completion. Ideas and decisions must be recorded accurately. Team size, which typically correlates with the size and phase of a project, is a significant concern with respect to personal relationships and project coordination. Members benefit from working alone before meetings to reduce the distraction of the multitude of ideas espoused by others. The definition, analysis, and consensus of the problems to be solved precede the generation of alternative solutions although they too can evolve during the collaborative process. An innovative solution demands the identification of a previously undiscovered problem or a new way of framing an old problem, and the widest possible exploration of ideas assures that the final design benefits from the variety of perspectives that team members can contribute.

Because participants have different methods of working and criteria of evaluation the leadership of the collaborative process must contend with the challenge of optimizing their relationships and eliciting a collaborative response. Some members may attempt to dominate; others may be submissive. Some may insist on a radical design; others may be more agreeable to a conventional solution. However, being collaborative still requires the gathering of each member's input and the building of consensus step by step. If no member of a team believes that his or her basic conception of the design has been seriously compromised, the final decision can be supported even though one believes that certain aspects are problematical. Each member may in addition be especially desirous of reaching consensus because failure entails the realization of wasted efforts and resources, the disappointment of clients, and the possible takeover of the project by another team or firm. A change in the model of leadership also parallels the change in the process of reaching decisions. Whereas the traditional leader assigned tasks to underlings, issued orders, and assumed authority for making decisions, the new collaborative culture demands leaders with a range of techniques to inspire a team with a lofty challenge, elicit maximum participation and the highest level of individual contributions, impose a direction when necessary, and assist the team

members to achieve the most successful design. In a role that resembles somewhat that of a mediator a leader can promote collaborative success by skillfully directing member interactions and asking members to challenge proposals and offer alternative solutions. When members feel that the team has generated ideas collectively Gropius's vision of a collaborative working community will have been both validated and vindicated. In accordance with their philosophy of collaboration Gropius and his partners were determined to give architects opportunities for diverse work and a greater involvement in making decisions. With the successful execution of demanding and creative tasks more architects can claim credit for a design and obtain a greater feeling of pride. The more satisfying and rewarding collaborative workplace thus generates a higher degree of loyalty and employee morale. Gropius also argues that collaboration can enable architects to generate better solutions collaboratively than they can by themselves, for they benefit from the insights, questions, ideas, perspectives, and challenges of others, which enrich the repertoire of potential solutions. The attempt to incorporate the views of all members can thus engender a synergy and synthesis superior to the more limited proposal of a single architect.

However, the proffered image of a harmonious collaborative process is belied by its often frustrating aspects. Different problem solving techniques and ideological differences can disrupt the effective functioning of a team. Some members may become more critical or passive. Conversely, avoidance of conflict may be the norm for other teams, a tendency that can hinder problem-solving effectiveness. Some members may feel that participation in a team diminishes their artistic individuality; and no guarantee exists that individual ambition and self-interest will disappear even despite the well understood advantages of the collaborative relationship. In addition, group norms are established sometimes only with difficulty especially if conflicts arise when individuals attempt to aggressively impose their views on others. Factions may coalesce and aggravate dissension. Shared assumptions may be potent enough to foreclose the generation of alternatives and suppress innovation. Moreover, especially talented and assertive members may be ineffective when working within the constraints of a group. Their divergent but valuable views may be modified if not rejected in a collaborative environment; and they may find themselves both alone and alienated from the team. In his advocacy of the benefits of the collaborative process Gropius fails to discuss the differences in architects' aptitudes and personalities that might make one rather than another more suitable for participation in a team endeavor. Those who prefer to create within the boundaries of accepted principles and precedents may, for example, be most comfortable with the collaborative process because of attentiveness to others' viewpoints, reluctance to challenge a governing paradigm, or desire to maintain group cohesion. Such members may view proponents of innovative ideas and their implied criticism of incremental change with suspicion and aversion. However, architects with a more independent stance may wish to break free from convention, re-conceptualize problems, question the design values of other team participants, and propose all-embracing alternative solutions. The more willing

clients are to accept these innovators' designs, the greater the opportunities for the realization of the inventive use and combination of new elements.

Studies of innovative people have shown that their traits comprise flexibility and inventiveness, independence of judgment and action, dedication, enthusiasm, perseverance, and tolerance of uncertainty.[1] Self-confidence originating from one's self-perception as an agent capable of generating significant new ideas is conjoined with tenacity, ambition, the courage of one's convictions, and a sense of strength from one's accomplishments. Sometimes viewed by others as abrasive and intransigent they can resist opposition without succumbing to self-doubt. In disputing the proposals of others and in attempting to correct otherwise unsatisfactory situations innovators apply their skill and energy to questioning conventions they consider obsolete and to examining areas with unresolved issues. Besides solving problems and helping to engender radical change their intellectual drive and curiosity thus uncover problems heretofore unrecognized or dismissed by others.

Let us return now to the subject of career disappointments, a major problem demanding rectification in Gropius's view of the culture of architectural practice. His awareness of the experience of former students awakened his sensitivity to the degree of disappointment and alienation of employees who work in offices that grant them few opportunities for participation in project design. The inability to exercise their imaginative capability subverts the expectations of these once idealistic students, helps to destroy hope and ambition, and generates mourning for the failure of career aspirations. Specialization, routine procedures, and the assignment of tasks considered menial replace the once general competence of the individual practitioner. The firm's hierarchical structure and the fragmentation of work create problems of maintaining enthusiasm and allegiance. The exalted positions of a few embody freedom and authority. Everyone else plays a supporting role. However, the solution proposed by Gropius clashes with the existing system of architectural education and its cultivation of a design meritocracy in which students are encouraged and pushed to strive for individual success. Grades are difficult to assign to students collaborating in a group assignment. Competition in school reinforces the presumption that ideas, like jewels, are precious artifacts to be jealously guarded and displayed for public admiration only at times of quasi-ceremonial presentation. Achievement leads to prizes, scholarships, and employment with prominent architects. In their subsequent careers architects relish their autonomy and opportunity to demonstrate their design talent. As the anthropologist Edward T. Hall has written: 'As a culture, we're ambivalent about turning anything over to anyone else. We're highly individualistic; there's positive reinforcement for not collaborating. Where talent is centered on making a personal reputation, collaboration will get the back of the hand.'[2] Biographies of individual architects reinforce the tendency to assign credit to a single architect and help to explain the difficulties in convincing both clients and architects of the benefits of collective design.

As a result of their education, individualistic ethos, temperament, and desire for freedom of creative expression not all architects are pleased with the prospect of