

•
**DESIGN EDUCATION
and
SOCIAL RELEVANCE:
RATIONALE
FOR AN ADMISSIONS
POLICY FOR DESIGN AND
ARCHITECTURE FACULTIES**
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Master's Thesis
Submitted to the Faculty of Graduate Studies
University of Manitoba Winnipeg, Canada
in Partial Fulfilment of the Requirements
for the Degree of:

**MASTER OF ARTS
INTERDISCIPLINARY PROGRAM**

Faye Lynne Hellner
0505034

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DESIGN EDUCATION AND SOCIAL RELEVANCE:
RATIONALE FOR AN ADMISSIONS POLICY FOR
DESIGN AND ARCHITECTURE FACULTIES

BY

FAYE LYNNE HELLNER

A Thesis/Practicum submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

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ABSTRACT

The thesis questions the admission selection policies for undergraduate studies in design and architecture faculties. At the present time most North American universities, including the Faculty of Architecture at the University of Manitoba, select students solely on the basis of an academic grade point average (GPA).

In order to explore criteria for a flexible admissions policy, the thesis addresses three central themes. Human Potential explores evolutionary ideas on human development; perception, cognition and memory. Social Relevance in Design discusses ideas on appropriate design response for the twenty-first century. Criteria for Judgement looks at current theories on human preference and aesthetics. Each of these thematic chapters explores innate human capabilities which appear to be an integral part of the design process.

The thesis explores the nature of design thinking from these three distinct points of view in order to describe differences in the thought processes between the logical, rational approach to learning and the intuitive/emotional aspects involved in design thinking. Because design processes appear to require divergent thinking skills that are not necessarily measured by the amount of knowledge one possesses, the question then

follows: is academic grade point average (GPA) the best predictor for selecting the most appropriate students to study design and architecture?

Data has been collected and analyzed from two centres for design education in Canada. The University of Manitoba study looks at the relationship between GPA and studio performance for 400 students. Findings from the U. of M. studies clearly indicate that there is no significant correlation between entry GPA and studio grades.

The University of Toronto study looks at the relationship between it's entry test (GPA is not considered) and studio performance for 62 students. Findings from the U. of T. studies show a significant correlation between the Toronto admission test and studio grades. The Toronto admission test is described in Chapter four and is included in the appendix of the thesis.

Both studies found a significant correlation between the first year studio course and the remaining studio courses throughout the programme of studies.

The thesis concludes with a summary of the arguments for an alternative admissions policy based on the findings of the qualitative studies and on information in the main body of the work.

ACKNOWLEDGEMENTS

The thesis presented here has been in its formative stage for ten years. In 1986 I attended a Steelcase Lecture presented by Dr. Betty Edwards.¹ She talked about perceptual skills in general and about drawing on the right side of the brain in particular.

The idea of physiological lateralization at that time was novel for me and it subsequently led to a course (Perceptual Skills) with Dr. Edwards at Stanford University and a masters level course in neuro-psychology at the University of Maryland, taught by Dr. Grace Yeni-Komshian. In 1987 I was fortunate to meet Dr. Paul Fedio, Head of the Department of Neuro-psychology at the National Institutes of Health in Bethesda, who allowed me to work with brain damaged patients at National Institutes of Health.

Since then, I have discovered some interesting ideas in the subjects of anthropology, architectural theory, aesthetics, cognition and perception, creativity, evolution, early childhood education, mythology, psychology, sociology, and visual literacy, all which have led me to clarify some questions in my mind. As the questions become clear, I have been able to formulate

¹Betty Edwards *Drawing on the Right Side of the Brain* 1970 and *Drawing on the Artist Within* 1979

ways to answer them, ways which I hope will be useful ultimately in my life as a professor in a Faculty of Architecture.

My colleagues in the Faculty of Architecture have been extremely supportive during the years devoted to this study. I am grateful to have been given the opportunity to share the enrichment which has resulted from my studies with the students in the faculty through my role as a teacher.

Kelley Beaverford, a student in Interior Design, and Darren Burns, a student in Environmental Design each helped with data collection. Bob Tate, Senior Systems Analyst, worked with me to convert the data from Statview to SAS for analysis.

Lori Amedick and Ann Devlin were extremely helpful during the final production stages of this document. Susan Shanley, as usual, was invaluable during the final weeks of preparation.

I especially wish to thank my three advisors: Dr. John Arnett, Clinical Health Psychology, Dr. Michel Janisse, Faculty of Arts, and Dr. Mario Carvalho, Faculty of Architecture for their guidance, rigour and patience.

P R E A M B L E

The notion that each of us has unique modes of learning and various ways of understanding new information prompted me to reflect on the abilities of the students we admit to the Faculty of Architecture at an undergraduate level.

As an educator in the first and second year design studios and theory classes, I have been acutely aware of the struggle many of our students have in coming to terms with the expectations we place on them as design thinkers. Many clearly believe we are expecting them to find the correct answer so they can move on to the next question. Process driven solutions are generally an enigma. Many "bright" students develop a mediocre method early and never grow as design thinkers. The majority of these students have been admitted with high grade point averages.

Are we admitting a population of students that have the most potential for success in both the reflective and creative aspects of designing the human environment?

Does our selection policy continue to perpetuate a technologically advanced but intuitive-deficient result; not only in the studio situation but also in the

profession?

Is it possible that through our admissions policy we have confined our student body to those who excel in those logical, rational, sequential processes that lead to the development of theoretically sound but intuitively deficient design solutions?

How can we implement an acceptance of "reflective, creative, and morale aspects of architecture and interior design; the poetic dimensions; the antidote to "techno-management" and then, what criteria should we use to admit the new student population to this kind of education?"¹

The thesis is an attempt to answer these questions. In order to do so it seems necessary to address three separate issues. The first I will call **HUMAN POTENTIAL**. This will explore evolutionary ideas on human development and current neuro-psychological ideas on perception, cognition and memory. I believe by bringing these ideas forward we can inform ourselves of the range of cognitive abilities we possess and perhaps begin to explore new criteria for admitting students into design-related fields.

¹Dr. J. Albrecht *Architecture and the Disproportionate Development of Human Faculties*
Princeton University

The second chapter will explore the question of appropriate design response for human beings living at the turn of the twenty-first century. It will take the form of a critical review of architectural issues today related to both form and social relevance and will be titled **SOCIAL RELEVANCE IN DESIGN**.

In order to justify a position on appropriate design, I include a chapter called **CRITERIA FOR JUDGEMENT**. Here I will discuss the question of aesthetics, using current theories on human preferences, and in so doing define the basis of my argument against our current admissions practices. I do not presume to be able to find definitive answers at this time. I believe, however, that I can show that we do not necessarily have the best selection criteria.

A quantitative study on admissions policies from two centres will be found in the fourth chapter; **RATIONALE FOR A FLEXIBLE ADMISSIONS POLICY**.

The thesis concludes with a summary of the arguments for an alternate admissions policy based on the findings in the quantitative studies and on information in the main body of the work.

In January 1994, armed with three boxes of books, recent publications, and a laptop computer I arrived in Cassis, Provence to begin synthesizing my ideas and writing this thesis. My daughter had given me a guide book to Provence

as a gift and during my first week here on a short excursion to Marseille I came across the following passage:

"To pay your respects to Modular Man, take bus 21 from the Bourse down dreary Boulevard Michelet to the *Corbusier* stop. In 1945, at the height of Marseilles housing crises, the French Government commissioned Le Corbusier to build an experimental **Unité d'Habitation**, derived from his 1935 theory of 'La Cité Radieuse'. Le Corbusier thought the solution to urban anomie, transport, and housing was to put living-space, schools, shops, and recreational facilities all under one roof, in a building designed according to the human proportions of Leonardo da Vinci's Renaissance man-in-a-circle, reborn as Le Corbusier's wiggly Modular Man. You can see the Man in relief on the huge rough concrete *pilotis*, or stilts, the most revolutionary aspect of the building, which lift it quite literally above the ground level of everyday human affairs.

For a city like Marseille, where people enjoy getting out and about at ground level, the building was a ghastly aberration, and they nicknamed it the *casa de fada* or 'house of the mentally deranged.' Plans for other unités were stifled and in 1952 the state sold the flats off as co-ops. But architects were entranced; for the next 30 years thousands of buildings in every city in the world went up on *pilotis*, before everyone realized that the Marseillais were right all along; it was mad to deprive a building of its most important asset, a ground floor. The unité's good points, however, had few imitators.....²"

The passage, both sad and funny, underlines a key point. We, as designers and architects, have become great imitators. The generation of current teachers, taught during the height of the modern movement, continues to tenaciously hold to the form and function theories born in Germany in a post

² Dana Facaros & Michael Pauls *The South of France Provence, Cote d'Azur* Cadogan Guides

World War 1 setting and its prevailing economic context.

The current curriculum and our evaluation of student abilities are driven by our own knowledge base and our personal expectations and biases. We as staff members were selected into design schools by the same criteria as our students. I believe our challenge is to provoke students to think about solving design issues now, today, in a way that is unique, relevant to the human condition and location, and acceptable in the field. Perhaps the population of students we teach can be selected in ways that are unique as well, admitting students with a broader range of abilities and intelligences into the studio setting, and potentially encouraging valuable dialogue and exchange of ideas.

Pour inventer il faut penser à coté
TO INVENT ONE MUST THINK IN ANOTHER WAY

C H A P T E R O N E

HUMAN POTENTIAL

"It is by logic that we prove" says Henri Poincaré, "but by intuition that we discover"

Designing the built environment, calls upon the human mind in ways that are different from the disciplines of art or science. The fundamental needs for technology, appropriateness, and aesthetic fulfilment require both rational and intuitive processes. Uniqueness and acceptability in design are connected to cultural, sociological, economic, and historical influences . A designer uses a range of tools; figural, semantic, symbolic and behavioral. The design process engages many cognitive skills including use of analogy and metaphor, inversions and rotations and requires a strong understanding of spatial scale and depth perception. Intuition and emotion play roles in the making of design. Are we assuming too much to rely on grade point average (GPA)¹ as the criteria for acceptance of students to design schools?

Are there aptitudes and abilities that are required for success in design

¹GPA is a numerical average of the results of examination in didactic coursework. Generally, the coursework is taken in sciences or general arts and examinations are taken in written form. Courses are linguistically based.

education which may not be related to academic achievement? For example, childhood exposure and interest in design, positively reinforced during early childhood education, may determine the interest level and commitment needed to sustain a student through a rigorous design education curriculum. In a survey of students studying fine art at University of California, Dr. Betty Edwards² found a high proportion of students with a "claim to fame" episode in the field of drawing at an early age. Howard Gardner³ claims that childhood recognition and reinforcement promotes self confidence and incentive to succeed in a field.

This thesis attempts to challenge the use of secondary level academic grade point average as the only criteria for tertiary entrance to Professional Design Courses. In his article *Architecture and the Disproportionate Development of Human Faculties*, Dr. Johann G. Albrecht of Princeton University writes in the *Journal of Architectural Education* Spring 1990...that " a curriculum change for most schools of architecture (and design) appears necessary. Such a change should take place in conjunction with research that studies the effects of various architectural subject matters on the functioning and interdependence of both sides of the brain. In addition, the increasing left

² Betty Edwards, *Drawing on the Right Side of the Brain* University of California Press 1970 and *Drawing on the Artist Within* 1979

³ Howard Gardner *"To Open Minds"* Basic Books Harper Collins New York 1989

brain bias in high school education ought to be more thoroughly investigated along with the admissions criteria used in architecture (and design) schools...". The former "elitism of the architectural profession must take on a sociological rather than a socio - logical frame of reference."⁴

The neuro-sciences⁵ have informed us that we humans possess complex processing skills. The purpose of this chapter then, is to explore these skills in order to question their involvement in design process . Recently, the idea of problem solving in relation to design thinking has followed closely the patterns of rational and logical scientific inquiry. Historically however, design often occupied an ambivalent position, found somewhere between a form of art and a form of technical science. The process of design inquiry might generally be described as rational but it seems "we do not plod in linear fashion from point to point, nor do we, even when solving logical problems, hold to the rules of that supreme human invention, logic. We seem to employ models, use intuition, play games, and sometimes deliberately ignore logic."⁶

⁴Dr. J. Albrecht *"Architecture and the Disproportionate Development of Human Faculties"* Princeton University 1991

⁵ Kolb, Bryan, and Whishaw, Ian: *Fundamentals of Human Neuropsychology*, Freeman, N.Y. 1985 (Second Edition)

⁶ Rudolph Arnheim *Visual Thinking* University of California Press 1969 p.140

Design process may require cognitive abilities such as divergent thinking skills that cannot be measured by the amount of knowledge one possesses. Divergent thinking skills produce multiple possible solutions which allow a variety of choices to be investigated in problem solving in order to reach a conclusion. The student's ability to escape entrenched methods of thinking may be more important than the ability to use existing paradigms.

Peter Rowe makes several observations about the nature of design thinking. He suggests that the unfolding of the design process assumes a distinctly episodic structure, which we might characterize as a series of related skirmishes with various aspects of the problem at hand. "Usually the results of these investigations cohere into a more singular direction for the design activity, although not necessarily as a linear progression of reasoning." ⁷

Most ideas of learning or discovery in the modern era and in traditional institutions of learning assume that whatever one might need, whatever one needs to know about a subject exists somewhere and the task is to get in front of a good teacher, pay attention and do one's homework. But I believe that the kind of learning that becomes necessary for survival in the post-modern age is different. There are many problems relating to the built environment that will require new ways of thinking in order to resolve them. To learn to

⁷Peter G. Rowe: *"Design Thinking"* MIT Press 1987

change the way we think about design we may have to relearn how to make moral decisions. "In a culture where beliefs and systems of ethical and morale judgement making is so diverse, it is important that part of the learning or discovery process includes ethical and morale discourse."⁸

The status of the designer/architect and the design educational system needs to evolve from a growing community respect rather than from a pretentious egotism based on the creation of a precious object. Sensitivity to human needs, dignity, self esteem, comfort, ritual, sense of place must become an integrated part of design education in order for this change to occur.

In order to explore the wide range of tools used by designers it will be important to understand something about memory, motivation, cognitive style, personality type and personal skills. These areas contain key elements that contribute to the making of design and may be the elements we miss when focused on GPA only for admissions criteria.

MEMORY

Memory is a key element in any creative field. The accumulation and storage of information, encoding systems, categorization skills, study habits, interest, and curiosity all affect our memory abilities. Often during secondary

⁸ Howard Gardner *"To Open Minds"* Basic Books Harper Collins New York 1989

education a large proportion of time is devoted to *semantic* memory, with only a small percentage given to productive thinking. Systematic approaches to learning and memory may create habits that nurture rigidity and inflexibility.

In order to recognize the cognitive abilities of our human brain it is useful to understand its development. Merlin Donald⁹ describes the evolution of memory as undergoing four major changes; procedural, mimetic representation, episodic, and semantic. The importance of his theory related to this thesis is his claim that we carry with us all the evolutionary abilities we have inherited throughout those changes. So if early humanoids in their *episodic* culture state developed a non-verbal "situation bound" behaviour, one that allowed for the perception of complex visual events, then we also respond to and acknowledge complex visual settings. Donald presents an interesting case for our current intellectual abilities arguing that our minds are an evolutionary composite, consisting of abilities that have been with us since the beginnings of life on earth. Between the development of episodic memory systems in apes, and semantic memory in humans, Donald traces a category of archaic but distinctly human culture that mediated the transition. He argues that the use of these archaic patterns of *mimetic* representations in modern human society have remained distinct from the uses of our later

⁹ Merlin Donald *Origins of the Modern Mind ;Three Stages in the Evolution of Culture and Cognition* Harvard Press 1991

cognitive acquisitions. In effect there is still a vestigial mimetic culture embedded within our modern culture and a mimetic mind embedded within the overall architecture of the modern human mind.

PROCEDURAL MEMORY

Procedural level abilities are not much more than stimulus-response situations. These could be described as the mnemonic (remembered) components of learned action patterns. Procedural memories must preserve general principles for action and ignore the specifics of each situation. For example, in learning to catch a ball one must learn the principle of tracking a moving object, the starting point or one's initial posture at the time it is thrown. Learning a procedure involves setting parameters and forming general rules. Arthur Koestler refers to "matrices of fixed codes",¹⁰ unifying formulas we apply to perceptual, cognitive, and motor skills. These silent codes are the way we condense learning into habit and these habits form the basis of mechanized behaviour patterns. It is only through the connection of previously unrelated dimensions of experience or the mixing of these matrices in unexpected ways that enables humans to attain higher levels of evolution. Koestler refers to this process as "the defeat of habit by originality." Many of our students employ mechanized behaviour patterns; perhaps our selection criteria miss those with abilities to connect those

¹⁰ Arthur Koestler *"The Act of Creation"*

unrelated dimensions. Unfortunately, many teachers reinforce these patterns for reasons of efficiency in grading or because they have also formulated mechanized methods of teaching and thinking.

MIMETIC REPRESENTATION

Mimetic skill or mimesis rests on the ability to produce conscious, self initiated representational acts that are intentional but not linguistic. A distinction should be made between mimicry and mimesis. Mimicry is an exact reproduction or imitation. Mimesis adds a representational dimension to imitation. It incorporates both mimicry and imitation to a higher end by involving the *invention of intentional representation*. In an ancient game like charades, played by humans for fun despite their possessing speech, the innate mimetic capabilities of people become evident. These games are played untrained and unrehearsed. They are creative, novel, expressive acts. The important properties of individual mimetic acts include intentionality, communication skills, reference, and the ability to model an unlimited number of objects.

Mimetic representation is still a central factor in human society. It is at the very centre of the arts. In some cases art form is purely mimetic as in mime or ritual dance. Most modern art forms, even those that depend heavily on oral or written language, are cognitive hybrids. Opera, theatre, and cinema

are all mimetic in style. Very little of what a good film communicates is capturable in words, although one talks about good movies afterwards to try to define the meaning. Does mimetic representation play an important role in Architecture? These novel and expressive acts might be the missing part of today's architectural forms, those missing parts without which cause the neutrality and repetition often detected in contemporary design.

Merlin Donald¹¹ quotes Northrop Frye describing the underlying "imagination" of literary art forms, the capacity to reconfigure the works in certain stylistic ways. Frye labels these "mythic modes". These modes determine the style, the kind of outcome, the ways in which characters and plots unfold. These "mythic modes" become the driving forces behind the literary genius and are rooted in our mimetic memory systems. Meaningful gesture in architecture and interior design must have similar "mythic modes" although they have been partly obscured by modernism.

Visual thinking is now seen as largely autonomous from language.¹² The same may be said of nonliterate, or naive, musical invention like much of early jazz, of most sports, and of most ancient human crafts like pottery and

¹¹ Merlin Donald *Origins of the Modern Mind ;Three Stages in the Evolution of Culture and Cognition* Harvard Press 1991

¹² Rudolph Arnheim *"Visual thinking "* University of California Press 1969 Words in their Place

weaving, which are learned to this day largely without language.

If then, one can make an argument for the integration of concept or meaning (mythic mode) into design solution, then one must look for ways of teaching this important aspect of design making. But more important, one must question the interest and abilities of those student, teachers and practitioners willing and committed to move the field of design to new levels by using these abilities.

EPISODIC MEMORY

Episodic memory is, as the name implies, memory for specific episodes in life, that is, events with a specific time-space locus. Thus, we can remember the specifics of an experience; the place, the weather, the colours and smells, the voices of the past. Such memories are rich in specific perceptual content. So, one memory system stores the generalities and discards the specifics, the other system stores the specifics but does not generalize. It seems self evident that the same neural mechanism would have difficulty doing both, therefore two separate mechanisms likely evolved for the two types of storage. There is a great variation of memory storage and access capabilities in humans, accounting for some of our differences in cognitive style. As I will discuss at length in the following chapter, in order for design to have meaning, human memories must be evoked in the sensitivity of the design solution. But the

designer would have to be able to access these memories and then learn the skills to transform those memories into form. Presently, we have no way to evaluate these transformation abilities in students seeking entry to design schools.

SEMANTIC MEMORY

Semantic memory, the dominant form of human memory, differs fundamentally from episodic memory. "Humans possess both procedural and episodic memory systems but these have been superseded in us by semantic memory which is by far the dominant form of memory in human culture, at least in terms of the hierarchy of control."¹³ Semantic memory has flourished, not as a biological evolutionary change but, as a technological change. With the advent of written language and symbols, humans suddenly became able to "externalize" their thoughts and ideas. With the ability to record information, one could then categorize it, arrange it and rearrange it. Logic and rhetoric appeared. Collective communication and networking soon followed. The kinds of facts usually tested in IQ tests or college entrance examinations depend heavily upon semantic memory.

The cognitive style of people stripped of symbolic language is familiar to us because a significant part of normal human culture functions without much

¹³ Merlin Donald, *Origins of the Modern Mind Three Stages in the Evolution of Culture and Cognition* Harvard Press 1991 p. 150-152

involvement of symbolic language. Examples are found in trades and crafts, games, athletics, various aspects of theatre including pantomime, in most social ritual, and in a significant percentage of art forms. If design is truly a blend of art and technology, history and culture, would it not seem appropriate to require the use of both symbolic language skills and mimetic representation?

MOTIVATION

In my ongoing discussions with the admissions department at the University of Manitoba I have often been told that high achievers (those achieving high grades at high schools) are often highly motivated individuals and that statistics have shown that in general highly motivated students seem to be more successful at University. Yet, motivation to achieve high grades may differ from the drive or curiosity required for problem solving and creative thinking in fields related to design and human comfort. Interest in a subject often leads to motivation which drives the will to proceed. There is little chance that those with a keen interest in designing the built environment would even have an opportunity to excel in related subject areas during secondary education. Design, art, and music, are rarely offered any more in North American education at that level. One can be challenged actively or passively. Active challenge comes from within and is a result of a complex

mix of genetic and environmental conditions.¹⁴ Passive challenge results from openings or the granting of permission; opportunities which present themselves and are acted upon. This ability to make or find opportunities is what moves private thoughts into the public domain. It requires a certain amount of confidence to find these opportunities and involves some risk taking to allow the opportunities to change one's direction in thinking. If confidence is necessary for motivation, how can we expect to find motivated students looking for admission when they have never had reinforcement in subject areas that interest them?

C O G N I T I V E S T Y L E

"Most thinkers are disposed to use a limited set of favourite thinking operations. The logical thinker likes to operate by rules of logic, step by step in a single direction. The intuitive thinker, by contrast, appears to take "mental leaps" often in surprising directions. While acknowledging a genetic influence in this personal bias toward certain mental operations, we can also see that education that rewards certain thinking operations, ignores others, and even penalizes a few. Education in which creative synthesis is ignored or penalized clearly does not encourage bias toward this important thinking

¹⁴ Jerome Kagan *Lecture on Creativity* Presented at the Smithsonian Institute Feb. 1987

operation."¹⁵ Much has been written about the fact that our current system of secondary education actively discriminates against the student who is competent in spatial ability. The arts seem to be considered as a training in agreeable skills, as entertainment and mental release. "By the time the competition for college placement becomes acute, it is a rare high school that insists on reserving for the arts the time needed to make their practice at all fruitful. Rarer still is the institution at which a concern with the arts is consciously justified by the realization that they contribute indispensably to the development of a reasoning and imaginative human being. This educational blackout persists in college, where the art student is considered as pursuing separate and intellectually inferior skills. The arts are neglected because they are based on perception, and perception is disdained because it is not assumed to involve thought."¹⁶

The pertinent literature indicates that there are two "styles of expression", namely the motoric and the conceptual; one is thing oriented, the other is idea oriented¹⁷. This distinction may have some merit as a description of

¹⁵Robert H. McKim: *"Experiences in Visual Thinking"* Brooks/Cole 1980

¹⁶Rudolph Arnheim, *Visual Thinking* University of California Press 1969 p.3

¹⁷Merlin Donald *Origins of the Modern Mind ;Three Stages in the Evolution of Culture and Cognition* Harvard Press 1991

typical behaviour, but one must keep in mind that the two attitudes do not exclude each other. When a person of the motoric type makes such heavy use of the voluntary and particularly the large muscles of the body he is not necessarily using his body instead of his mind. Far from being a brainless athlete, he/ she may be the kind of person who thinks best by doing things, either robustly like a manual labourer or delicately like a watchmaker.....there is obviously no ceiling on the intelligence at which such motoric people as surgeons, mechanics or sculptors can do their work; on the other hand, a person strictly limited to the "manipulation of ideas" is not immune to operating with distressing dullness. Arnheim contends that our educational system discriminates against the most gifted, those capable of becoming the most productive in the arts and sciences but who have particular trouble with the formalistic thought operations on which so much of our schooling is based, and who struggle against them most strenuously.¹⁸

Minds that can associate parallel meanings, for example, would appear to be better suited to design environments than those with more formalistic approaches. Comedians use parallel meanings (one linguistic, the other mimetic) with words and gestures. Architecture and design both have parallel meanings, underlying context forms the base or meaning of the design. Form, light, colour, texture and placement reinforce the meaning and

¹⁸ Rudolph Arnheim *Visual Thinking*, University of California Press, Ltd. 1969

give the place or space its functional and emotional quality. Bruner¹⁹ distinguishes two major modes of thought, the narrative and the analytic. Narrative imagination constructs stories and historical accounts of events. Analytic imagination seeks logical truth. Narrative skill develops early and naturally in children, whereas the logical scientific skills that support analytic thought emerge only after systematic education. The difference between these modes of thought run very deep. In modern culture the narrative mode still predominates in the arts, while the analytic predominates in the sciences. There is little doubt that narrative thought developed earlier in human history. The supreme product of the narrative mode is myth. The myth is the authoritative version, the debated, disputed, filtered product of generations of narrative interchange about reality.

Susanne Langer stated in an effort to describe her vision of meaning and human knowledge..."between the facts run the threads of unrecorded reality, momentarily recognized, wherever they come to the surface....the bright, twisted threads of symbolic envisagement, imagination, thought-memory and reconstructed memory, belief beyond experience, dream, make-believe, hypothesis, philosophy-the whole creative process of ideation, metaphor, and

¹⁹ J. Bruner *Actual Minds, Possible Worlds* Cambridge University Press 1986

abstraction that makes human life an adventure in understanding.²⁰

Dualists²¹ speak of two systems of representation - a verbal code and an imagistic code: localizers place the linguistic code in the left hemisphere, the spatial code in the right hemisphere. Research carried out by Richard Sperry²² on split brain patients provided early evidence that the left hemisphere is dominant for linguistic functioning and the right for spatial functioning. But his "split brain" research provided suggestive evidence that an individual possesses more than a single consciousness. Indeed, the individual may harbour two or more consciousnesses or selves, which in the wake of the surgical intervention, have become alienated from one another.

The questions raised by this research are still in debate. It may well be that both hemispheres are involved in emotional processing, with the left hemisphere somewhat more oriented towards euphoria, happiness and optimism; the right hemisphere towards pessimism, reaction, hostility. That may be why destruction of one hemisphere seems to produce the opposite

²⁰ Susanne Langer, *Philosophy in a New Key: A study in the symbolism of Reason Rite and Art* Harvard University Press Renewed Edition 1979 (original 1942)

²¹ Dr. Roger Sperry, *Studies with Joseph E. Bogen on patients with life-threatening seizures*, California Institute of Technology 1967

²² Dr. Roger Sperry, *Studies with Joseph E. Bogen on patients with life-threatening seizures*, California Institute of Technology 1967

configuration of traits. It may also be that the consciousness of the left hemisphere is simply more oriented toward words and other discrete symbols and analytic categories, while the right hemisphere is correlatively primed for the emotional, spatial and interpersonal realms. Perhaps we can find intimations of these two cognitive styles in normal individuals, with individuals who exploit right hemisphere processes being more humanistically oriented, while those who favour left hemisphere processes being more sober, or scientific. Even though these pictures are caricatured, and the brain is far more than two little selves, one should not minimize understanding of human intelligences that may eventually be obtained from studies of the sundered hemispheres.

COINCIDENCE

David Feldman speaks of the necessity for "coincidence", that conjunction of genetic, familial, motivational and cultural factors which must all be present for the creative act.²³ Jerome Kagan proposed an interesting theory which described coincidence very clearly at a conference I attended in Chicago in 1987.²⁴ The conjunction happens between what he refers to as the "sub-personal, the personal, the impersonal and the multi-personal." In Kagan's

²³ David Feldman Tufts University quoted in discussion with Howard Gardner *To Open Minds* Basic Books 1989 p.113-116

²⁴ *Brain and Mind* Conference held at Chicago Institute of Art and Sponsored by Reese Hospital Department of Neurology

description the sub-personal refers to our genetic make-up, those potential attributes present in our biological make-up. The personal refers to our upbringing; familial position, early education, peer pressures and environmental conditions. Here we find the basis for the motivational drive of creativity. The impersonal has to do with what Kagan refers to as the "field". This is general information already known about a subject. A field can be ripe for innovation for many reasons and it is interesting historically to find the same innovative ideas appearing simultaneously in places with no possible connection between them. The multi-personal notion has to do with acceptance; that is to say that a new idea is only meaningful if it can be understood in some contextual form. Many ideas have been considered premature in retrospect. These are thoughts which have appeared too early to be understood and are only later appreciated for their novelty when the field has become understood. This notion of co-incidence complicates the idea of personal or cognitive style. It appears that the interdependence of many elements including a great deal of chance is involved in innovative thought.

PERSONALITY TYPE

An Assessment of Personality Type, Creativity, and Imagery in Interior

Design Students²⁵ gives evidence indicating a link between personality type and creativity in design students. In their introduction Diehl-Shaffer and Weber quote Jung (1921). Jung's model describes four mental powers and four attitudes. The four mental powers are sensing, intuition, thinking and feeling. The four attitudes are extraversion, introversion, judgement, and perception. Jung's model was used as the theoretical base for the Myer's Briggs Type Indicator (MBTI)²⁶ which classifies people into one of sixteen personality types, stemming from the mental powers and attitudes mentioned above.

Examples of MBTI classifications are as follows: The Dionysian Temperament SP (sensing/ perception) describes those individuals who are free, independent, and impulsive. They live for the immediate action and gravitate to jobs where action is involved. They tend to be performing artists. Epimethean temperament SJ describes individuals having a need to belong. They are dependable and stable with a strong work ethic. NTs are classified as Promethean temperament individuals. Power over nature fascinates them. They have a desire to understand, control, predict and explain their sense of reality. They enjoy achieving high levels of competence. They seem to be

²⁵Jeanne Diehl-Shaffer and Margaret Weber *An Assessment of Personality Type, Creativity, and Imagery in Interior Design Students* JIDER 1993

²⁶ Manual: *A guide to the development and use of the Myers Briggs Type Indicator*, Palo Alto, CA: Consulting Psychologists Press

attracted to the sciences, mathematics, philosophy, architecture, design and engineering.

The Apollonian temperament individuals are those NFs on the MBTI. They need to have meaning in life and their hunger is centred on people. They strive for unity and uniqueness and need to be recognized for this. They like to better the conditions of people in the world and seem to be drawn to the arts which involve verbal and written communication. In my exploration of the social relevance of design in the following chapter I address the issue of responding to human needs in the design of the built environment. It might be important to evaluate the personality types of students seeking admittance to design schools in order to shift the balance from the predominantly power and control types to those with a leaning towards more humanly oriented goals.

PERSONAL SKILLS

"There were originally two ways to understand Apollonian ideals; the first was about creating or representing a universal ideal (human) form. The second was not about representation at all; it was an attitude toward one's own productive powers that make one balanced and at ease among a crowd of people".²⁷

²⁷ Krome Barratt *Logic and Design in Art, Science & Mathematics* Design Press 1980:

Personal skills are a complex group of attributes or deficits ranging from biological to psychological, cultural, imitative or familial and in some ways the least alterable of all the frames of mind. These skills are defined by characteristics such as motivation, risk taking, daringness, optimism, willingness, fear of failure, competitiveness, anxiety, interpersonal skills.²⁸ It is in this area that one's will or determination becomes a key determinate to success. Benedetto Croce²⁹ describes the process of externalization of a creative idea as being the result of a "vigilant will" which persists in not allowing certain visions, intuitions, or representations to be lost.

In his book *Art, Mind and Brain*, Howard Gardner quotes Howard Gruber in his chapter on creativity in the adult years. Gruber conceives the "whole thinking" person as harbouring a number of interacting subsystems. One subsystem involves the organization of knowledge. A creative person seeks to relate various facts and theories scattered across his area of concern in order to come up with a coherent and comprehensive synthesis.³⁰ The idea of "multiple intelligences" is an old one. There are several relatively autonomous human intellectual competencies or frames of mind and

²⁸ Howard Gardner : *"Frames of Mind"* Harper Collins 1983

²⁹ Benedetto Croce *"Aesthetic"* Nonpareil Books Boston 1978 (Originally published 1909)

³⁰Howard Gardner: *" Art, Mind, and Brain"* Basic Books, Inc. Publishers New York

Gardner says it should be possible to identify an individual's intellectual profile. The following are descriptions of these frames of mind. Each has its potential relevance to design thinking but rarely do we look past the first in our criteria for admission.

LINGUISTIC ABILITY

The development of linguistic skills assumes foremost stature. It is through reading, writing, and speaking that the majority of human beings in the world communicate, record, persuade, remember, entertain and some believe, process information. Gardner points out four aspects of linguistic knowledge that have striking importance in human society. These are: 1) Rhetorical aspect of language; the ability to use language to convince other individuals of a course of action; 2) Mnemonic aspect of language; the capacity to use language to help one remember information; 3) Explanation role of language; oral instruction, the word in its written form, metaphor, and analogy; and 4) Language explaining itself; the understanding of what language is and how it works; syntax, semantics, language as a system.

It is the linguistics sphere of knowledge which is most prevalent in Western primary and secondary education. Therefore it is no surprise that the skills required for University are tested by the success in linguistically related examinations and knowledge bases. But what happens to those faculties of human abilities which are no longer aided by technological changes and

therefore are no longer considered mainstream forms of communication? I fear that we are overlooking those very faculties of the mind which could inform the design process and deserve recognition here.

MUSICAL ABILITY

Both rational and emotional, "music is a succession of tones and tone combinations so organized as to have an agreeable impression on the ear and its impression on the intelligence is comprehensible...these impressions have the power to influence occult parts of our soul and of our sentimental spheres and....this influence makes us live in a dreamland of fulfilled desires or in a dreamed hell"³¹ Part of the organization of music is horizontal; the relations among the pitches as they unfold over time; and part is vertical, the effects produced when two or more sounds are emitted at the same time, giving rise to a harmonic or dissonant sound. Then there is pitch, and rhythm and timbre-the characteristic qualities of a tone. All of these elements raise the question of the role the brain plays in the understanding and creating of music.

In the last three decades the importance of music education has surpassed the importance for art education in primary and secondary education. The Suzuki system linked to the nurturing Japanese mother and the English

³¹ *Arnold Schoenberg

musical curriculum in infant and junior schools are two of many examples of the importance placed on musical education at early stages of development. There is no question that the auditory sense is crucial to all musical participation.

Rhythmic organization can exist apart from any auditory realization; as in design, where patterned elements must appear in the created product. In the case of music the patterns appear in sounds and they are finally and firmly put together in certain ways not by virtue of formal consideration but because they have expressive power and effects. Students with developed musical abilities may be much more adaptable to design thinking than those with well developed linguistic abilities.

LOGICAL-MATHEMATICAL ABILITY

Many mathematicians report that they sense a solution, or direction long before they have worked out each step in detail. Poincaré speaks of mathematicians who are guided by intuition and at first stroke make quick but sometimes precarious conquests, like bold cavalry men of the advanced guard. But eventually if the mathematics is to convince others it must be worked out in precise detail with no error in definition or chain of reasoning and this Apollonian aspect is essential to the performance of the mathematician. Abstract thinking occurs at higher levels of mathematical

study. There is no question that abstraction plays an important role in design thinking. And that the love of geometry stimulated the classic elegance of Greek designs. Many of the world's most sacred places, for example, the Taj Mahal, have mathematical genius as their inspiration. We cannot underestimate the power of this important ability.

S P A T I A L A B I L I T Y

The ability to visualize forms in space is special and apart from logical or linguistic ability. Spatial capacities are important for orientation and recognition, graphic depictions and symbols. Spatial relationships in design are what create the tension and balance in composition. It is the designer's ability to manipulate these tensions and balances that makes a space feel comfortable or unwelcoming, rigid or relaxed, safe or awe-inspiring.

A very interesting aspect of spatial cognition grows out of the resemblances that may exist across two seemingly disparate forms or across two seemingly remote domains of experience. This is a world of analogies. Gardner agrees that mental models or images play an important role in problem solving.

Rudolph Arnheim³² argues that the most important operations of thinking come directly from our perception of the world with vision serving as the

³² Rudolph Arnheim *Visual Thinking*, University of California Press, Ltd. 1969

sensory system par excellence which undergirds and constitutes our cognitive processes. Arnheim suggests that unless we can conjure up an image of some process or concept, we will be unable to think clearly about it.

BODILY-KINESTHETIC ABILITY

These cover the range of sensory-motor skills. Child psychologist Jerome Bruner³³ has embraced the idea that the development of these skills ought to be conceived of generally, not merely with reference to the bodily activities of infancy as Piaget³⁴ describes them but rather with respect to all manners of cognitive operations. The development of sensory-motor skills adds to our understanding of the world. Dance is a skill through which people communicate. Skill in sports, theatre and mime all require perfected body movement. The rigour and control is not something you can lay out in logical steps.

According to John Martin, a student of performance, we are all equipped with a sixth sense of kinesthesia-the capacity to act gracefully and to apprehend directly the actions or the dynamic abilities of other people or objects. He claims it is the dancer's whole function to lead us into imitating his actions

³³ J.S. Bruner, *The Process of Education*, Harvard University Press, Cambridge 1960

³⁴ Translation and interpretation of Piaget's work: Barry J. Wadsworth, *Piaget's Theory of Cognitive and Affective Development*, Longman Press New York & London 1989 (Fourth Edition)

with our faculty for inner mimicry in order that we may experience his feelings. Facts he could tell us, but feelings he cannot convey in any other way than by arousing them in us through sympathetic action.

The manipulation of objects relates to almost every field: Surgery, Dentistry, Engineering, Art and Architecture, Typing, Farming, and Basic Science. Sometimes hand-eye coordination is merely routine, while at other times a considerable amount of creativity may be involved.

CONCLUSION

Different abilities are valued in every culture; for example, an excellent verbal memory was valuable in preliterate cultures; the capacity to navigate accurately without map or compass is important on dozens of islands in the South Pacific; sensitivity to tiny sensory cues is critical among hunters in tribal cultures; skill at dealing with other persons is necessary in cultures that rely heavily on bargaining. Many of these human capacities command less respect in Western conceptions of intellectual ability, with our focus on logical rational thought.

In an evolutionary sense, we have moved from the Socratic method of rationalism and rhetoric to a less rule driven system. Why then, when it comes time to admit students to a discipline that requires a wide range of

abilities, do we continue to draw students from the same selection pot?

Selection procedures which rely solely on past academic achievement will select a proportion of students with a strong social conscience, a vivid imagination or creatively talented. But the procedures are likely also to select many academically superior students with little relevant design ability. Such a selection procedure is therefore somewhat of a hit and miss affair if both sensibility and academic competence is required.

Many students who graduate will doubtless undertake routine assignments and it may be argued that competence in the technical aspects of architecture may often be of more importance than sensitivity in design. Rational thinking is not being ignored or seen in a detrimental way. The study of design and architecture requires a composite of talents; sensitivity, communication skills, technical ability and creativity. If a wider definition of aptitude could be applied to selection procedures, more attention could be paid to the fit between the requirements of the profession, the needs of human beings, and the types of student best suited to being designers.

It is important that we do not look for a single standard for acceptance into design schools. Varying abilities would appear to be advantageous, as in evolution, there must be many variations of a particular theme to allow the

best fit for all possible selection possibilities. There is a contradiction between the technological idea of networking, sharing ideas, communication...all those aspects that make a field progress and grow and the emotional notion of looking back, internalizing and finding personal meaning in design. How do we go about using both these valuable tools for design making? One way of proceeding is to observe how a new population of students, those entering with other "intelligences", works within the framework of the curriculum. It is possible that the mix of intelligences of various types of students could have a synergistic effect in the classroom and studio.

This chapter has looked at potential human abilities that are not yet considered in the selection policies for design schools. But if we were satisfied with the look and feel of our built environment we probably wouldn't even be asking the question of student potential. It is now important to ask the second, more difficult question. Is it possible that our selection policy continues to perpetuate a technologically advanced but *emotionally deficient* result in the way we design our built environment. To do so we must now critically review our present urban condition.

C H A P T E R T W O

SOCIAL RELEVANCE IN DESIGN

The contextual setting for writing this thesis is the town of Cassis, fifteen kilometres east of Marseille. The buildings are constructed of local materials taken from the quarries outside the town. The building walls are thick to insulate the homes from the summer sun without the need for artificial air conditioning. There is abundant pattern and texture, winding roads and much vegetation (often a road is built around a tree). The scale of the buildings does not overpower. But most wonderful is the sense of community that has grown up here, with areas to sit and to talk; with small squares and parks, where grandmothers and granddaughters meet casually for a walk and the town elders can sit and watch the children at play. There is something about this place that feels familiar and comfortable although it is not part of my personal heritage. Many people who visit here are attracted by the place and return over and over again. What are we attracted to and why?

We as modern humans bring many vestiges of the past to enhance our appreciation of today's complex world. We smell spring in the air, we sense oncoming storms, and we touch each other with pleasure. We laugh and

gesture, expressing ourselves without words. We feel anxiety, terror, fear. We suffer from light deprivation and claustrophobia. We dance and dream and desire. Our sensual perception of the world still affects our moods and sense of well being.

With each cultural change from the earliest human settlements we have developed ways of creating shelter and community, using the current technology, local materials, and meaningful form. Before the industrial revolution and today's technological advances in communication and transportation, communities developed their unique indigenous styles, closely bound by spatial and functional requirements and limited to local construction abilities and materials on hand. The traditions taught by local example and respected leadership included a caring attention to detail and craft, and brought with it a continuous story about the local way of life. The result, still seen in many European small cities like Cassis, was a well integrated, visually delightful and highly contextual environment. Evolution and human history speak through these environments. Richard Kearney¹ quotes Richard Dawkins and describes how he calls these replicating memory patterns "memes": the cultural equivalent of genes. Examples of memes are tunes, ways of building pots, catch phrases, verbal, physical, and culturally meaningful activities. These small towns are a good example of

¹ Richard Kearney *The Wake of Imagination* University of Minnesota Press 1988

memes.

Constructivists say that the brain/mind is not only a constellation of organs but also a repository of language, myth, memories, social norms, cultural values and beliefs; idealized images of who we are and what we would like to be. We recognize environments which hold meaning and respond favourably when we encounter them.

Fifty years after the birth of modernism, we can now reflect on the tremendous changes our architecture and interior spaces have undergone. Our lives have become functionally enhanced. We have come to understand the needs of physical comfort. Furniture is designed to fit the human body. Equipment facilitates our daily needs. Advancements in lighting, heating, and air control all insure appropriate environmental conditions. We clearly understand "function". To function is a question of doing; what we do, how we do it, where we do it; a measured existence, based on numbers and sizes. But how do we really function? Are there other needs, more basic in nature, unrelated to "doing" that have more to do with being? In this modern (post-modern) world, how can we again incorporate those "memes", those notions of meaning and relevance into our environmental habitat?

Could the sense of these "communities" be incorporated into larger urban

centres? Could the use of indigenous building materials and local craft and construction techniques again become an accepted standard? Might the copies of famous architects and designers find criticism and rejection? In biology, the human body rejects transplants of organs not recognized as "self".

Environmentally, we can see the effect of transplanted architecture and interior design in our cities. It is our responsibility as a school to critically analyze our present condition and find appropriate ways to change the present trends.

Semioticians, the scholars of signs, suggest that all the things human beings create are containers of meaning. A building is thus not only a shelter, but a statement. And a city is a veritable library. Every object that the eye falls upon tells something about its creator, and about the society, and is used to create meaning within the mind of the beholder.

In Richard Sennet's *The Conscience of the Eye*,² the author describes the advent of the modern skyscraper. Technological developments of the nineteenth century made it possible to construct a building where there was no visual barrier between inside and outside. Originally the design was used in Kew Gardens (designed by Joseph Paxton) to create an environment for plants and flowers, allowing unseasonal growth and tropical plants to

²Richard Sennet *The Conscience of the Eye*, Norton 1990

flourish in the enlightenment of that period. But technology without sensitivity led the modern rationalists to create glass boxes for human beings. From these enclosures humans can see nature and light, but cannot hear the wind or birds in the trees or smell or touch nature. This sterility or disconnection from the surroundings creates a kind of isolation and neutralization, a dehumanizing effect.

VISIBILITY AND ISOLATION

The theme of isolation in contemporary society is evident in all aspects of our lives. Watch people in social settings, dancing for instance, each alone, appearing to be with a partner but without physical contact. The sense of touch, or being in touch has slowly disappeared. Is it possible to reverse the trend set by Mies (the "archon of modernism, who is now accused of fathering a soulless environment of glass towers in which men and women are as cut off from one another as from the outside.³) The genius of Mies was his overwhelming unity of design, "space drawn into itself". But this pursuit of the whole in the end becomes so self sufficient it becomes a thing unto itself. These perfect buildings arouse in others an "intimate of absence", of "untouchableness". This is what Sennett⁴ describes as the troubling effect of

³ (Mies, the father of visual solitude") Richard Sennet *The Conscience of the Eye* Norton 1990 p.111 An architect of the sublime

⁴ Richard Sennet *The Conscience of the Eye* Norton 1990

Architecture as great art without conscience; unity without moral meaning. "The taste and style of our time associates successful business with clean-cut, starkly reduced shape, and the disorder and rapidity of modern living calls for stimuli of split second efficiency. The problem is that a pattern of high abstractness fails to specify its referent, whereas the identification of a particular company, brand, institution, idea, is the purpose of advertising."⁵

There is a certain truth to this idea in reference to design. The communications and representations we see in cinema, magazines, advertising suggest a "look" that we become used to and subsequently "need". Are we satisfied to continue copying the latest or do we want to find other deeper, perhaps more meaningful ways of creating space?

In the Journal of Architectural Education, Johann G. Albrecht presents the notion of "disproportionate development of human facilities"⁶; a theme originally identified by Karl Mannheim in the late 1930s. He describes two categories of uneven development. The first, general disproportion, relating to technological and scientific advances; and the second, social disproportion, relating to the ethical and moral capacities in our society. Mannheim's conclusion is that "the contemporary social order must collapse if moral

⁵ Rudolph Arnheim *Visual Thinking* University of California Press 1969 p.144

⁶ Johann G. Albrecht M.A. Ph.D *Journal of Architectural Education* Spring 1990

power and the individual's insight into the working of the environment do not keep step with technological development." Marcuse suggests that the result will not be collapse of social order but the "total dominance of technical rationality". How does this uneven development of "mind" and "matter" or the dualism between humans and objects affect Architecture? What is the impact of the loss of emotionalism and the loss of poetic and mythical elements in the built environment?

Albrecht argues that we are presently reacting to the constraints of modernism by "playing with form" but ignoring social needs. Architects, designers and planners must assume responsibility for social needs and community issues. "Given the architectural need to create form and the reluctance to give up rationalism, architecture currently lacks meaning. This severed effect causes architecture to become internalized. It seeks to find meaning in itself, rather than seeking relevance in society. The frame of reference is lost. Designers become slaves to technology and bureaucracy. With strong competition and a recessionary market place architectural response is often focused on efficiency and is programme driven. It fits the straight jacket of technical rationality".⁷ Programme driven and efficient design solutions may have fit the paradigm of Modernism. But modernism in architectural education treats design as a process, and therefore is definable,

⁷ J. Albrecht *Architecture and the Disproportionate Development of Human Faculties*
Journal of Architectural Education Spring 1990

objective, sequential and goal oriented. Students learn a method by which to reach a conclusion; a set of operational rules.

In Rowe's comprehensive and extremely analytical work, *Design Thinking*, he concludes with three important strategies for change in modern Architectural theory. The first involves looking at language. He challenges us to understand the complexity and potential of language as a design tool. "Semantics, quotation, reference, and above all contemporary meaning must be understood and then expressed as architectural form."⁸ The notion of language as a part of thought is described by Susan Langer in great detail in *Philosophy in a New Key*. If we can't express the problem, if there is no meaningful language left to describe the feeling, then there is little chance of changing the situation.⁹

Rowe's second strategy describes 'bricolage' or the making use of found objects; not just physical objects, but found objects of the mind; processes that allow the reuse, the recombination, and the reinterpretation of ideas in a given context. The interpretation of human needs in context from various points of view could lead to a range of understanding and potential design

⁸ Peter G. Rowe *Design Thinking* MIT Press 3rd printing 1991

⁹ Susan Langer *Philosophy in a New Key A Study in the Symbolism of Reason, Rite, and Art* Harvard University Press 1957

solutions far richer than solutions found using analytically programmed process theory. The attention to detail and love of craft is closely related to the 'bricolage' theme and will be discussed in the following chapter.

Finally, Rowe describes 'type', understood as visions or design concepts based on collective memory of a community, a place, or a culture that ultimately result in a design response connected to social relevancy.

By changing the way we think about design and therefore changing the way we make design, who will then be responsible for judging its success? It could be that the field or community will be responsible for accepting or rejecting the change. Stanley Fish¹⁰ of John's Hopkins University, in his description of cultural atheism, states that the responsibility of meaning in art, literature and architecture is shared between the creator, writer, and the designer on one hand and the viewer, reader, or user on the other. The acceptability in this case of a created piece becomes a community responsibility and the community becomes an interpretive community. Such communities are engaged in on-going projects of reality construction.¹¹

¹⁰ Stanley Fish as quoted by: Walter Truett Anderson, *Reality Isn't What it Used to Be* Harper Collins 1990

¹¹ Ideas taken from: Walter Truett Anderson, *Reality Isn't What it Used to Be* Harper Collins 1990

The community assumes responsibility and in a sense "gives permission" for the acceptance of an idea, concept, or in rare cases a new paradigm. The search for knowledge, truth and values may not have all its answers in the past. We should be prepared to listen to points of view that are different and opposing and from present sources, the points of view of the people around us; people who have dreamed and fabricated reality through cultural stories, their personal views and insights and their deep concern for the future of this place. Only when we really start to listen can we begin to formulate an idea of a relevant criterion for judgement.

All professional fields must be affected by the shock waves travelling outward from the post-modern deconstruction movement. Harvard Law School's complex conflict is well described in Anderson's chapter on the meaning of literature.¹² New paradigm shifts are an integral part of the development and understanding of medical research. Stephen Hawking speculates on revolutionary changes in the way we understand physics. Michael Graves talks about the influence of representation and alludes to the link between image and mind. He claims if we cannot see an idea we can't think about it. He describes methods of induction and deduction in design thinking and then adds two interesting alternatives; abduction and appropriation. The last

¹² Walter Truett Anderson, *Reality Isn't What it Used to Be* Harper Collins 1990

two being processes that deal with the issues of applicability, appropriateness and enhancement of design.¹³

The sociologist Erving Goffman describes how people use life as a stage to act in character and costume the every day activities of work and private life.¹⁴

Goffman's work, a peek into the backstage of society, was widely read and became part of the folklore about the social constructions of reality.

Architects in the 1960s, familiar with his ideas began to design space that would accommodate the desire of people to perform for one another, clothing boutiques with stages, restaurants with dramatic entrance ways, theatrical department stores, full wardrobe and dressing rooms as a part of suburban lifestyle. Venturi, referring to "camp" architecture in the 1960s in Las Vegas, claimed it was not architecture in poor taste, but architecture that laughed at itself. Post modern architecture may be camp as well, buildings with a giggle. When we laugh at ourselves are we dealing with a kind of embarrassment? And if we are embarrassed is it because we are not doing the right thing or at least the thing that feels most comfortable? What is an appropriate response to architecture in the 1990s? In the 1960s architects were designing buildings in which people would perform. Post-modern architects,

¹³ Graves, Michael; *The Necessity of Drawing, Tangible Speculation*, Architectural Design 47, no.6 1977

¹⁴Erving Goffman, *The Presentation of Self in Everyday Life* New York: Doubleday 1959

taking the logical next step, design buildings that are performers themselves, imitating other kinds of architecture but letting you know they are not being serious about it. Perhaps it's time to get serious.

Richard Kearney claims that one of the greatest paradoxes of contemporary culture is that at a time when the "image" rules supreme, the notion of a creative human imagination seems under mounting threat. We no longer appear to know who produces or controls the images which condition our consciousness.¹⁵ We are visually inundated with imagery of what is current, what is fashionable, what is "in", and what we need and want. When there is so much offered, why do we need our imaginations at all? I can't help thinking that there is good reason why Winnipeg looks the way it does. We have borrowed and copied, applied and adopted, imitated rather than imagined, and never really discovered what this city is or could be.

The imminent demise of imagination is a post-modern obsession. Post-modernism undermines the modern belief in the image as an authentic expression. The advent of the technological image (T.V., video, advertising, photo reproduction techniques) all signal a momentous shift from the age of production to the age of reproduction. Kearney claims there is a growing conviction that the images we possess are merely reproduced copies of images

¹⁵ Richard Kearney *The Wake of Imagination* University of Minnesota Press 1988

already there before us. This is a depressing thought. How can we hope to stimulate new imagery or stir our imagination when everything is there before our eyes?

Perhaps it is time to re-look at Abraham Maslowe's catalogue of human needs in order to stir our imagination. He describes the basic needs of human beings: health, clothing, shelter, food, sex, and the cravings of human beings: love and intimacy, work and mastery, playfulness, spiritual meaning, and security. Our cravings can only be solved in the symbolic universe.

Designers will need to reacquaint themselves with symbolism in order to fulfil their responsibility. People seek safety in social structure, seek freedom from anxiety and chaos and need to belong in a place or in a group or family. Without self esteem (a stable, firmly based evaluation, usually high, of oneself) humans cannot reach the ultimate goal of self actualization, the fullest expression of human potential. Humans are creators. We create stories, myths, values, and beliefs. These are all part of our symbolic world and can be translated into symbolic architecture and design. We live in a time of communication without community. Global ideas and ideals are available through multiple information sources. But we, as a community in the urban sense (local) and in the professional sense (as designers of the built environment) lack a sense of self, a firm base or centre from which to make judgements on what is good or what is right for us, now and as we move into

the 21st century.¹⁶ Post-modernism and globalism are partners, expressing the largest and most fragmented view of reality (or reality construction) we as humans have ever experienced. It feels as if we have traded our integrity as a community for current modernity and in the trade we have lost our sense of self and meaning and spirit.

Anderson suggests that we create the reality of the world we live in through story telling, and the stories create the imagery and belief systems that we use to understand "reality". And so we develop an image of the human species as creators of stories, myths, values, beliefs, theories, morals, laws, and religions. Socially constructed reality is his definition of what we create. We are part of this system as thinkers, educators and designers of the built environment.

We have much to think about and apply in our ongoing vision and revision of our goals and mission. The generation of students seeking admission to schools of design and architecture are young people with changing attitudes about the environment. These are a generation of students raised during the height of the women's movement who have seen shifts of power in the home and workplace. Many of these young people have a work ethic and spirit resulting from restrained employment choices and financial

¹⁶ Walter Truett Anderson, *Reality Isn't What it Used to Be* Harper Collins 1990

difficulties. There is already a marked swing towards humanism and personal caring that was less evident in the generation that followed the second world war, a time when everything seemed possible. We should take advantage of the range of abilities of these young people by offering an open policy of acceptance based on skills that reflect more closely those abilities needed to readdress the role of architects and interior designers, those who can create a collective and varied response to human needs, unique works which will find acceptance in the field because they are sensitive to our past and because they respond to social needs of the present.

C H A P T E R T H R E E

CRITERIA FOR JUDGEMENT

"I do not now intend by beauty of shapes what most people would expect, such as that of living creatures or pictures, but....straight lines and curves and the surfaces of solid forms produced out of these by lathes and rulers and squares....these things are not beautiful relatively, like other things, but always and naturally and absolutely"¹

"The question of the beauty of geometrical figures is connected with aesthetic Physics. But if by geometrical figures be understood the concepts of geometry (the triangle, the square, and the cone) these are neither beautiful nor ugly, just because they are concepts. If, on the other hand, by such figures be understood bodies which possess definite geometrical forms, they will be beautiful or ugly, like every natural fact, according to the ideal connexions in which they are placed."²

Over two millennia separate the quotations from works by Plato and Croce, each of whom attempted to define beauty. These particular passages attracted my attention by their opposition, and serve as an example of the difficulty in attempting to define an aesthetic parameter that is relevant for our time and respectful of our evolutionary and cultural heritage.

Our understanding of beauty does not seem to develop from logical or sequential deductive processes. Instead, I believe our sense of beauty has more to do with an evolutionary sense of comfort, safety, and pleasure which has grown familiar to us as humans over a very long period of time.

¹ Plato date unknown

² Benedetto Croce 1909

My purpose is to define some fundamental elements that are profoundly related to human feelings of familiarity and comfort, elements which appear to contribute to what we refer to as beauty. I will attempt to link each definition to cognitive skills found in human beings; those skills which differ from rational and testable capabilities, in order to return to my initial argument for reevaluating our admissions criteria for students entering disciplines which have aesthetics as their very essence.

It appears that our personal perception of beauty is related to memory; associations of our personal past. We, as humans, have a collective past which can be triggered by associative memories of those things which give us comfort in ways we cannot necessarily describe. A colour or smell may give an ordinary form an irresistible beauty. These effects are difficult to quantify and become the basis of personal and cultural tastes. The associative process is an important element in the understanding of aesthetics. Our heightened excitement in the experiencing of pleasure is the result of a complex mix of emotions, ranging from pain, fear and anxiety to delight, awe, and ecstasy. It is this delicate balance of emotion and past experience that seems to constitute our sense of beauty.

"The aesthetic effect of objects is always due to the total emotional value of the consciousness in which they exist....sometimes this value may be inherent in the process by which the object itself is perceived; then we have sensuous and formal beauty; sometimes the value may be due to the incipient formation of other ideas, which the perception of this object evokes; then we have beauty of expression. But among the ideas with which every object has relation there is one vaguest, most comprehensive, and most powerful one, namely the idea of self. The impulses, memories, principles, and energies which we designate by that word baffle enumeration; indeed, they constantly fade and change into one another; and whether the self is anything, everything, or nothing depends on the aspect of it which we momentarily fix, and especially on the definite object with which we contrast it."³

This idea of beauty in the eye of the beholder adds a personal component to the evolutionary argument that follows and speaks strongly for consideration of each and every applicant on his or her personal abilities.

The idea that a design should fulfil required functions to maximum efficiency, unprejudiced by past practice, opinion or fashion, has achieved massive successes, particularly in the design of multiples and mass production. Le Corbusier's opinion that a house is a machine to live in is no longer disputed; just as planners now regard a town as a machine to live in.

³ George Santayana *The Sense of Beauty* Dover Publications Inc. New York 1955 reproduced exactly from the original written in 1896

Failures in the application of functionalism have derived from an incorrect definition of "live in". Functionalists have not always given sufficient priority to one's joy in the senses, and the need for enrichment and ornamentation of the environment. How do we address the question of satisfying sensory requirements in the design criteria of every object to be used by mankind?

CRITERIA

FEELING

Benedetto Croce, in Chapter X of his major work *Aesthetic*, discusses the concept of aesthetic feelings. In order to do so he must explain the word "feeling", a word with rich meaning in philosophic terminology. In the context of art he uses the word synonymously with impression. He also describes feeling as the *non-logical* and *non-historical* character of the aesthetic fact, that is to say, pure intuition, a form of truth which defines no concept and affirms no fact. He defines feeling as a 'special activity', of non-cognitive nature, having its two poles, positive and negative, in pleasure and pain. If we consider feeling as one of the senses and we are addressing the question of fulfilling sensory requirements in the built environment, then we can begin to argue for non-cognitive alternatives in terms of human abilities and processes.

In order to understand why we strive to fulfil sensory requirements we must also discuss the concept of pleasure and its importance to human beings. Once we can define pleasure, we can then look for those elements that have historically and repeatedly formed the basis of what has sustainably been described as pleasurable.

P L E A S U R E

Species, including our own, have survived by engaging in behaviours contributory and essential to survival. Eating appropriate foods, copulating, caring for offspring, and selecting appropriate habitation are all instances of this. But such activities were not consciously undertaken as strategies for survival. Rather, survival resulted through natural selection of species which found an intrinsic pleasure in a preponderance of activities with survival value. In an unpublished paper, the English geographer Jay Appleton writes:

“(The creature) enters the world programmed as it were, to seize the advantages offered by the environment while avoiding its disadvantages....This pattern of activities is indispensable. They must be put into operation if the creature is to survive, and this means that there must be some mechanism which ensures that they are. That mechanism is what we call, for lack of a better word, “pleasure”. There are other words like, drive, desire,

libido which one might find employed in the literature. In plain language we do all these things on which our survival depends because we *want to* . That is the force which impels us."

If one can identify unlearned behaviours with survival value, one might also say that such unlearned behaviours are based on equally unlearned, genetically determined pleasure stimuli. As we developed as a species, humans found that survival was the basic driving force. In order to flourish as modern humans we then developed complex and subtle ways of deriving pleasure, using our minds and bodies. It is in this complex and subtle area that I will attempt to define the illusive nature of our aesthetic appreciation of the world.

The following examples define characteristics that humans repeatedly prefer, or find pleasure in. In each case, I believe I can clearly show a dichotomy, that is both a rational and "other" requirement in the making of the pleasure. In this way I hope to put forth the argument that since the beginning of the modern movement we have taken a one sided approach to design, and in so doing have lost an important component in our ability to design things of beauty. By intellectualizing, theorizing and rationalizing our approach to design, we have lost the feeling, the spontaneity, and the mystery; and in so doing have created environments lacking in beauty or pleasure for the beholder.

TIME: EXPRESSION OF THE PAST

It has been said that in order to withdraw the materials that he/she needs from the bank of history the designer must pay interest with the capacity to reinvent forms in a new context. A designer like Emilio Ambasz has been extremely successful in synthesizing Andalusian form and motif with studied climatic requirements while incorporating sounds of nature in order to "complete the language of places of popular Andalusian architecture".⁴

Accepting the validity of the past can lead to invention. Expression presupposes impression. It is impossible to imagine creating in a vacuum. One must have experienced the sea to write about it or paint it. What then must we experience to enable us to create spaces for human comfort?

Santayana⁵ believes that we are not always engaged in the idea of the search for beauty, rather it is an underlying fragrance of our lives, one which is built upon over and over, taken out and explored, revitalized and enhanced, forever with us and forever changing.

If design is informed by a mixture of past experience, deep commitment, intuitive sense of placement and a passion for transmitting a concept or an idea and if these abilities emerge and change over years of designing then we

⁴ Paolo Portoghesi *Postmodern* Rizzoli New York p.106

⁵ George Santayana *The Sense of Beauty* 1896

are dealing with an extremely varied and complex mix of human abilities. Even the notion of being able to 'train' someone to design comes under question.

NARRATIVE SPACE

"When we make a design gesture we do it for humane reasons". Sennett traces the development of the town square by explaining its evolution in connection to the Renaissance invention of the mechanical clock. Before the invention of the clock, people could hear the time by the sounding of the church bells and could go about their daily routine. When the clock face was developed it was important to be able to see the clock, so many buildings that were too close to the clock tower or were too high and obstructed its view, were removed in order to allow visibility. In this way, town squares were formed with negative spaces within built environments. "In the glass and steel tower with its simple furniture carefully placed, we experience an emptiness that does not duplicate the experience of the Renaissance planners, for whom clearing way was a positive act; the way in which these planners diffused the knowledge of time."⁶ Sennett refers to this as narrative space. It tells a story and results in a space with humane consideration and meaning. The idea of narrative space implies that the designer has a story to tell. Do we search for students with the ability to tell stories? Can we teach design

⁶ Richard Sennett *The Conscience of the Eye* W.W. Norton and Company London 1990

incorporating the notion of story telling to students who lack the interest of the novel, fantasy or fiction? The ability to transform a picture into a story might be an important criterion for admission of students to design schools.

COHERENCE

Coherence is the ability of a design to 'hang together'. "Coherence implies types of symmetries, repetition of elements and unifying textures that contribute to a good gestalt. The underlying informational theme in Coherence is the capacity to predict within the scene".⁷ The ease with which the information can be organized is important for human comfort. It is this ease which helps us to comprehend and understand our surroundings. This predictability or legibility as Lynch (1960) calls it, enhances our comprehension of a space and helps to maintain orientation while seeking other elements. Coherence is taught early in the curriculum of most design schools as part of the ordering principles of design. The underlying order of a design offers comfort but on it's own creates sterility and boredom. Unfortunately, ordering principles are sometimes the only criteria used for judging design success, but order is only one of the steps needed for creating meaningful design solutions.

⁷ Stephen Kaplan *Aesthetics, Affect, and Cognition / Environmental Preference from an Evolutionary Perspective* Environment and Behaviour Vol.19 No.1 January 1987 p. 3-32

LIKENESS AND DIFFERENCE

There appears to be a biological basis to our predilection for "likeness" tempered with "difference". Nicholas Humphrey⁸ suggests there is a survival value, indeed an imperative, in the ability to discern categories of things on the one hand and the differences between them on the other. Animals must be able to recognize their own species to survive, but within their own species must be able to recognize mother, brother, male, female, friend, and enemy. He goes on to suggest that as humans we have developed a great sense of pleasure with this basic ability; a built-in delight in categorization and differentiation. He extends this notion to explain, among other human oddities, the collector, who finds pleasure in accumulating endless variations of a particular stimulus type, and can be shown to do so just for the sake of the variations and commonalities. "From this, it is a short step to an explanation of the familiar observation that experiences or artifacts consistently ranked very high in aesthetic value usually exhibit high levels of both complexity and order. The complexity engages our search for variations of stimuli; the order reassures us that those stimuli share a commonality; and that we find in the juxtaposition an enduring aesthetic delight, whether in poetry, music, or architecture."⁹

⁸ Nicholas Humphrey *"Natural Aesthetics"* Essay (1980),

⁹ Grant Hildebrand *The Wright Space* University of Washington Press 1991

There seems to be a dichotomy which appears in all the preferred arts between, on the one side order, regularity, simplicity, and harmony, and on the other, complexity, disorder, irregularity, and redundancy. We tend often to concentrate on the reinforcement of ordering principles and the selection of those students with ordered methodology in their process, ignoring the equally important but extremely different set of principles vital to the balance.

M Y S T E R Y

Mystery has been shown to be a strong predictor of environmental preference in a study carried out by Kaplan et al.¹⁰ What is meant by the idea of mystery in design is the organization of space in which there is a promise of gaining more information by moving deeper into the space. Mystery refers to instances when the new information is not present but is inferred from what is already seen. This suggests some continuity in these settings between what can be seen and what is inferred. But this also suggests a kind of enticement of the unknown. In evolutionary terms Kaplan describes this as a process of "updating and extending our cognitive maps". The curiosity stimulated by mysterious settings appears to be inferential, reflecting the potential information in a setting. "Thus Mystery seems to call upon a reasonably

¹⁰Stephen Kaplan *Aesthetics, Affect, and Cognition / Environmental Preference from an Evolutionary Perspective* Environment and Behaviour Vol.19 No.1 January 1987 p. 3-32

complex albeit unconscious, inferential process.”¹¹ The notion of mystery in design requires much more attention. If “inferential” skills are important in design process, should our selection policy include tests for these skills?

SANCTUARY AND REFUGE

Refuge and prospect theory is best described by Grant Hildebrand¹². He quotes Appleton from a book entitled *The Experience of Landscape* arguing that evidence of pleasurable response to landscape conditions consistently illustrate certain repetitive characteristics. These characteristics he calls prospect, by which he means a place with unimpeded opportunity to see; and refuge, by which he means a place of concealment. These are mutually complimentary, and can be summed up as the dual characteristics in the phrase “to see without being seen”. Appleton offers a biological rationale, for he points out that the selection of juxtaposed conditions of refuge and prospect confers a vital advantage in species survival. Homo sapiens that intuitively chose settings which allowed seeing without being seen hunted successfully without being hunted, and so survived and flourished. But the intuitive pleasure motive that drove such a choice must have preceded any grasp of its functional value. The choosing of such settings must have been

¹¹ Stephen Kaplan *Aesthetics, Affect, and Cognition / Environmental Preference from an Evolutionary Perspective* Environment and Behaviour Vol.19 No.1 January 1987 p. 3-32

¹² Grant Hildebrand *“The Wright Space”* University of Washington Press 1991

driven by an intuitive immediate pleasure that was felt by the containment, safety or warmth of refuge and the command of prospect. Such a pleasure, genetic to our species, is therefore independent of the functional utility of the setting and persists quite independently of our need to call on that utility. This concept of protection and view finds expression in the search for "nesting" place, a fundamental requirement of all species. Outstanding examples of the use of prospect and refuge in design can be found in the residential interiors created by Frank Lloyd Wright. The human scale of the entrance spaces and hearth areas offers immediate refuge on entry and the vistas to large window openings and views of the exterior offer prospect.

FRAGMENTATION & BRICOLAGE

Sennett describes the art of Leger in order to make a point about fragmentation. He explains that Leger was an artist who used new methods of seeing and recording (painting) to describe fragments of real life from the present and past. Leger said "you know, the USA is a country where there are innumerable pieces of refuse. One throws something out rather than repair it. Thus you see in this painting that there are pieces of iron, machine arms, and even neckties. What I liked to do in America was make paintings out of all that." Modernists have trouble incorporating such a *painterly* idea of time and current life into design solutions. We easily slip into nostalgia and the quoting of past forms rather than giving expression to the principles or ideas

that those forms were based on.

Rowe describes this concept when he refers to bricolage; here we are presented with the idea of making use of past forms, fragments, and edifices in our design solutions, not as mere sympathetic contextualism whereby one designs after the fashion of what is around and about, but as a strategy that provides both continuity to the past and access to novel future works. "For after all if we admit the possibility of recombining, reusing, and reconstructing the old parts that are laid at architecture's doorstep, some measure of continuity is assured and the new use to which the old parts are put advances the possibility of new meanings"¹³ The danger of an architectural bricolage is that of legitimacy; its strength is in the sense of cultural continuity.

A bricoleur is a tradesperson or craftsperson in France. The bricoleur fashions things from found objects with care and ability. To fashion these objects one needs a love of the craft and a feeling for the material. These are potential criteria for acceptance into design schools.

W I T

Wit depends on transformation and substitution of ideas. In humour it has been said to consist in quick association by similarity. In design the

¹³ Peter G. Rowe *Design Thinking* MIT Press Cambridge and London 1991

substitution must be valid and the similarity real, though unforeseen or unexpected. It is a characteristic of wit to penetrate into hidden depths of things, to pick out there some telling circumstance or relation, by which noting, the whole object appears in a new and clearer light. Wit belittles one thing while dignifying another and its comparisons are as often flattering as ironical. When designers recompose fragments in a new context they are imitating the human activity of humour by bringing about a comprehension of new meaning through a shift in context. This seems to be one of the complex ways that modern humans have developed to find pleasure.

Why is humour never considered a criterion for entry into design studies? Arthur Koestler¹⁴ claims that "all patterns of creative activity are tri-valent; they can enter the service of humour, discovery or art. The jester and savant must both live on their wits; the jester's riddles provide a useful entry into the inner workshop of creative originality."

RHYTHM AND VARIATION

While attending the New Music Festival in Winnipeg in 1993 I listened to a composition consisting of one note played repeatedly for approximately ten minutes. At first, I experienced anticipation waiting for the repetition to stop and the composition to begin. The anticipation turned to impatience, then to

¹⁴ Arthur Koestler *The Act of Creation* Penguin Books 1964

boredom as the note persisted. But then something interesting happened. I began to detect subtle differences in the intensity of the sound and the spacings between the notes. The experience became complex and exciting. I have remembered that experience vividly. What happened, I believe, had something to do with our need for complexity and variation. We search for differences, we see because of contrast, it is the difference between things that gives them meaning. The rational ordering process in architecture of the modern movement is based on the grid, a centreless and boundaryless form of repetition. The modern grid is an organization of repeating elements on which nothing changes....."crowding out the dimensions of the real and replacing them with the natural spread of a single surface. Insofar as its order is that of pure relationship, the grid is a way of abrogating the claims of natural objects to have an order particular to themselves; the relationships in the aesthetic field are shown by the grid to be in a world apart."¹⁵

How can mutations occur when an image repeats? My example of new music may offer a partial answer. Andy Warhol explored the theme of repetition; what was unnoticed in one reproduction becomes worth studying in many. Our perception of the image seems to change in value as one sees it all at once multiplied. The difference between a Warhol painting and an interior space or building is enclosure. As a viewer, one might perceptually manipulate the

¹⁵ Rosalind E. Krauss *Grids; The Originality of the Avant Garde and Other Modernist Myths* Cambridge MIT Press 1986

endless repetition on a canvass. Yet, as inhabitant or user, confined to one space, one is not given the luxury of subtle variation due to continuous repetition. Here the user suffers from deprivation of complexity, a fact now understood by post-modernists in their search for meaning and expression in design. The deconstructive movement puts a high value on difference, seeking to create experiences of radical disorientation.

How then can we incorporate variation and mutation, expression and emotion (din and vigour: Barratt *Logic and Design* Design Press 1980) into the design process? The Greeks referred to a centredness of human existence by the word *sophrosyne*, which could be translated as balance, grace, or poise. It is this centering between control and emotion, order and complexity, intellect and intuit, "socio" and "logical" elements that must be passed on to receptive and able minds to create living environments for humans.

How do we know if the students we select have the ability to centre; if they have the intuitive, emotional and sympathetic abilities needed for the balance? Grade point average cannot provide this information. Behavioral research at Harvard¹⁶ has led to tests for E.Q., an emotional quotient, which redefines human abilities with reference to character traits. These tests may help us in our admission selection.

¹⁶Daniel Goleman *"Emotional Intelligence"* Bantam 1995

FREE AND NOT FREE BEAUTY

Croce describing beautiful, categorizes as follows: "by not free beauties have been understood (by others) those objects which have to serve a double purpose; and since it seems that the first purpose sets limits and barriers in the way of the second, the resulting beautiful object has been considered as not free beauty"¹⁷. Architectural works are especially cited in this context. But Croce argues that by simply making the destination of the object which serves a practical end enter into the aesthetic intuitive realm, one can successfully design a thing of beauty by perfectly adapting it to its practical purpose. "Rustic dwellings and palaces, churches and barracks, swords and ploughs are beautiful, not insofar as they are embellished and adorned but insofar as they express their end"¹⁸. This notion of expressive architecture suggested in 1909 deserves consideration in our present time.

NOVELTY AND UNIQUENESS

"Genuinely original or novel activities can come about only when an individual has achieved mastery in the field where he or she has been

¹⁷ Benedetto Croce *Aesthetic* Nonpareil Books Boston 1978 Originally published 1909

¹⁸ Benedetto Croce *Aesthetic* Nonpareil Books Boston 1978 Originally published 1909

working. Only such an individual possesses the necessary skills and sufficient understanding of the structure of the field to be able to sense where a genuine innovation will lie and how best to achieve it.”¹⁹ The notion of novelty is described as the skill of fashioning an unfamiliar and worthy product in any realm. Hopefully this generation of designers will rediscover the process whereby novelty is not the consequence of useless, perpetual re-invention, but the result of reintegrating ancient norms which have always been in agreement with our thought processes, with the forms of the human body and with the collective memory.

There is a distinction between novelties, those which are cherishable and those which are not. It is those “cherishable novelties” that I have attempted to define. That is to say, those with characteristics that are widespread throughout the human race that appeal to our sense of beauty, that capture our imagination, that give us a sense of pleasure; those qualities that make the difference between ‘surviving’ and ‘flourishing’.

Uniqueness in science and mathematics has the advantage of experimental method to determine whether or not an idea will sustain itself. Uniqueness in design must be judged in more complex ways and is often confused with fad or style. It is worth noting that originality and novelty is in fact deemed

¹⁹ Howard Gardner *Frames of Mind* p. 288, 289

undesirable in many cultures in which adherence to an earlier consolidated tradition is the unquestioned goal.

CONCLUSION

The criteria described here are not all inclusive. I have selected these themes in order to make connections between meaningful design gestures and human cognition. These connections relate the notions of aesthetics to our human potential (chapter 1). Simply stated, if we are now prepared to look beyond function as a design informant, then we are ready to look beyond logic as a design tool.

In July of 1980 the Venice Biennial inaugurated it's first international architecture show entitled "The Presence of the Past". It was a Post-modern exhibition on Post-modernism, architecture as theatre, architecture detached from the place that generated it. It was a return and a departure, a paradox, as most Post-modern works are. The symbols and motifs of the work reflected a past for which we may have subconsciously longed after a generation of modernism. But most important, the exhibition heralded a beginning, a time of questioning and most hopefully, a time of listening. I like to think of the exhibition in Venice as the first step in the turning point which moves Architecture and Interior Design from a socio-'logical' to a socio 'emotional' discipline.

We, as design educators, must take responsibility for the future of design in our cities. I have posed the question of our selection policy and its possible relationship to the design results we experience daily in our personal environments. It seems we have abilities that lay dormant, untapped resources of tremendous potential for change. But until we even ask the questions, we cannot expect to affect those changes.

When St. Isadore of Seville wrote the *Etymologies* (a book about the origin of words) in the seventh century A.D., he traced the word *city* back to its different sources. One is *urbs*, the stones of a city. The stones were laid for practical reasons of shelter, commerce and warfare. The other root of city is *civitas*, and this word is about the emotions, rituals, and convictions that take form in a city. This division of meaning is a constant and persistent dichotomy in design thinking. Too much of one creates order and sterility. Too much of the other, chaos and confusion. We must continually strive to reach a balance between the two, a complimentary union of function and emotion that will protect and nurture us as human beings.

C H A P T E R F O U R

RATIONALE FOR A FLEXIBLE ADMISSIONS POLICY

Many architecture and design programmes restrict enrollment. Scholarly research on selective enrollment to date, however, has been inconclusive. Often restrictions are in place to comply with accreditation standards that recommend design studio ratios (15-18 students to one critic)¹. Others restrict enrollment because of limited resources or space. Some feel restrictions are needed to ensure quality graduates and prevent glutted job markets.² Regardless of the rationale for implementing selective enrollment, problems invariably are created by this practice with the development and administration of the selection process.

At the present time students in most undergraduate Architectural and Interior Design programmes in North America are admitted on the basis of academic achievement or grade point average (GPA). The University of North Texas, the University of Georgia, the University of Kentucky and the

¹FIDER, 1988, p.10

²Whiteside, Rothgeb, and Congleton (1986) Quality Control: A challenge to interior design educators. Journal of Interior Design Education and Research, 12(1), 3-8

University of Toronto have developed drawing and spatial relations tests for admissions selections to their programmes. ³

This thesis examines the entry requirements at two Canadian Universities to determine the relationship between entry criteria and student performance. The University of Manitoba Faculty of Architecture selects students solely on the basis of academic grade point average (GPA). The University of Toronto School of Architecture and Landscape Architecture selects students solely on the basis of an admissions test which will be described in the study method.

There is little published literature on the subject of admissions criteria for Design and Architecture schools. The most relevant findings to date are found in the study by Gilchrist entitled Creative Talent and Academic Competence ⁴. Gilchrist's study considers both "dimensions of talent" and their interactive effects on measures of personality, creative activities, and convergent and divergent thinking skills. The experimental group was chosen from 209 students of architecture classified as high or low on creativity and high or low on academic achievement; then split into four groups (15 in each), one high on both criteria, one low on both, and two groups high on

³ Copies of the admissions test are found in the Appendix, p. 1-9

⁴ Margaret B. Gilchrist *Genetic Psychology Monographs*, 1982, 106 261-318 Monash University, Clayton, Victoria, Australia

one but not the other. Personality and creative activity variables discriminated between levels of creativity but not between academic achievement levels.

Kolar and Gorman (1987)⁵ identified cumulative grade point average (GPA) as the most important factor for predicting success in passing a portfolio review leading to acceptance in design schools. Their findings support college admission procedures that emphasize grades and standardized test scores. No literature was found that tests the relationship between GPA and undergraduate course grades in design studio or didactic course work.

THE STUDY QUESTIONS

Is there a correlation between academic achievement grade point average (GPA) and the success rate of students at the Faculty of Architecture, University of Manitoba, during the remainder of their undergraduate education?

Is there a correlation between the Toronto admission test and the success rate of students at the School of Architecture, University of Toronto, during the

⁵Kolar and Gorman, M. (1987) Determining the significance of standardized tests administered to entering Interior Design majors. Journal of Interior Design Education and Research, 13(1), 45-50

remainder of their undergraduate education?

STUDY METHOD

The sample for the first study question has been drawn from students in the undergraduate departments at the Faculty of Architecture, University of Manitoba after completion of their undergraduate degree. There were approximately 400 students in the departments of Environmental Studies and Interior Design during this study, between 1986 and 1991. All data for this study has been obtained with permission from the Admissions office at the University of Manitoba.

Data collection was done in 1992 and 1993. Grades from all courses in all years of both the undergraduate departments of Interior Design and Environmental Studies were compiled and analyzed. A statistical study of these data examines the student grades to determine whether or not a significant correlation exists between admission level GPA, design studio courses or didactic lecture courses. For the purposes of this study, Design Theory was selected as the didactic course. Lectures and written examinations are given in the Design Theory courses, therefore, the form was considered closest to that of the subjects taken to determine the GPA before admission.

The University of Manitoba study is divided into two sections; Department

of Interior Design data and Department of Environmental Studies data. The mean entry mean GPA differed slightly between the two departments but was not statistically significant, with students in Environmental Studies having a slightly higher grade point average. The study included students who withdrew from the program and/or those who took longer than the designated number of years to complete.

The sample for the second study question has been drawn from students in the undergraduate department at the School of Architecture and Landscape Architecture, University of Toronto after completion of their undergraduate degree. There were 62 students in the programme during the period of this study. Data was collected from one full admissions year (1989) and the remainder of the students' undergraduate courses between 1989 and 1991. All data for this study has been obtained with permission from the Admissions office at the University of Toronto.

The admissions criteria for the University of Toronto is stated as follows: "For purposes of selection (at U. of T.) considerably less emphasis is placed upon the normative measures of academic attainment such as ACT scores or College grade point averages than upon indications of effective intelligence for architecture, and it is further to be noted that candidates giving strong indications of architectural aptitude may be admitted to the college even

though their academic achievement might be lower than the minimum normally required for admission to the university."

The Toronto admission test consists of five components: 1) a deductive reading and drawing assignment 2) a writing assignment 3) a spatial cognition exercise 4) a directed composition exercise and 5) a personal statement of interest in pursuing a design degree. (A copy of the Toronto admission test is found in the appendix, p. 1-9).

The thesis also examines the University of Toronto student grades to determine whether or not a significant correlation exists between the score of the Toronto admissions test and the design studio courses.

In addition, the Toronto admissions test was given to the entire first year class in the Faculty of Architecture at the University of Manitoba at the beginning of 1992. A random selection of 13 tests was sent to Toronto and graded by the Toronto test team. Although there was a small sample group, the data were analyzed to determine whether or not a significant correlation exists between the entry GPA of University of Manitoba students and how they scored on the Toronto admissions test.

OBSERVATIONS

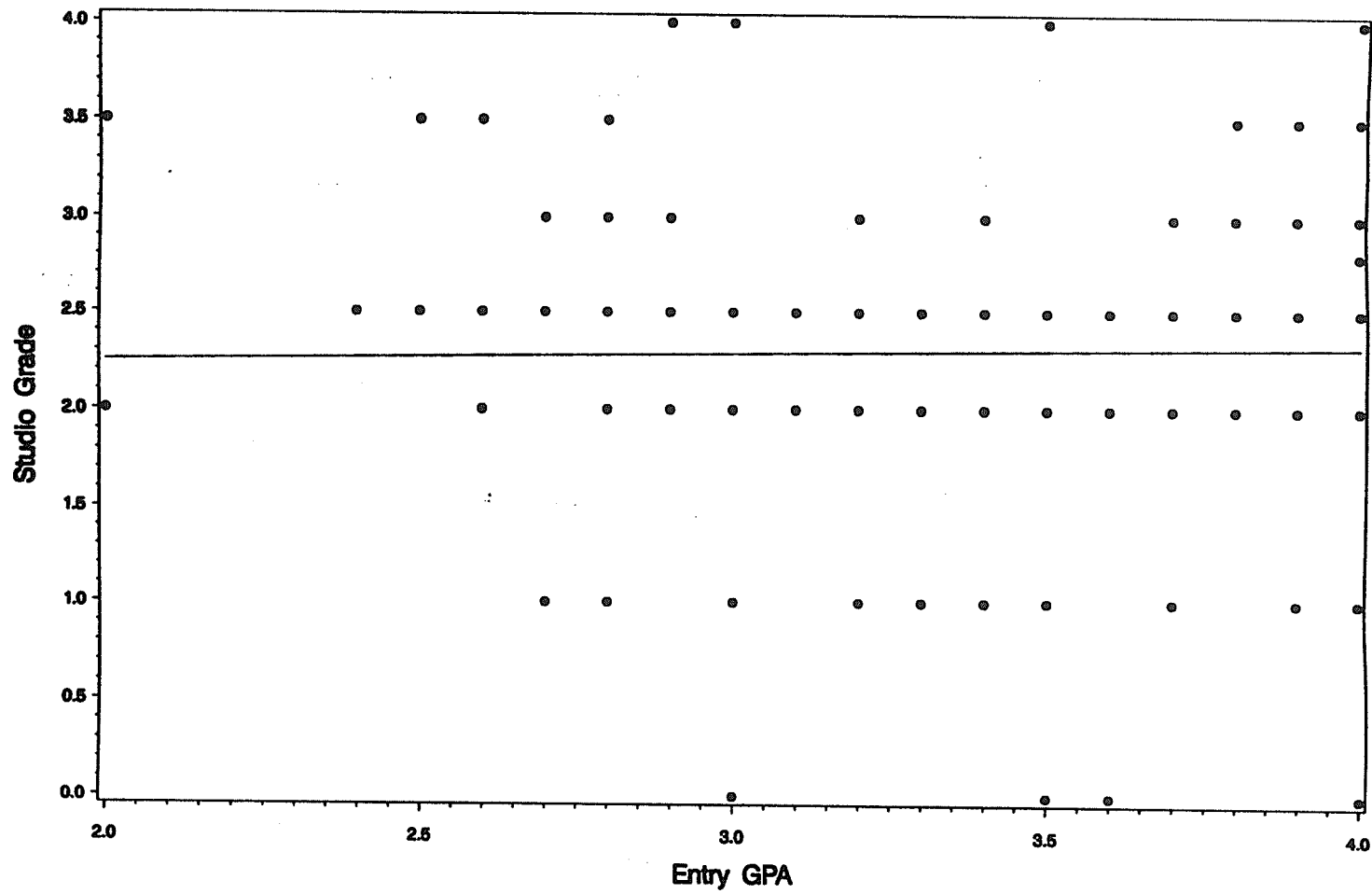
DEPARTMENT OF INTERIOR DESIGN DATA

Figure 1 I.D. shows the correlation between entry GPA and design studio 1 for 236 students who were accepted into the programme of studies in Interior Design between 1986 and including 1990. Mean GPA of the five classes ranged from 3.41 to 3.58. There is no significant correlation between GPA and Studio 1. ($r=-0.02655$, $p=.6849$). Similarly, figures 2, 3, and 4 I.D., show that no significant correlation between entry GPA and the remaining studio courses were identified throughout the program.

In contrast, we found a highly significant correlation between studio 1 and the remaining studio courses throughout the program ($r=0.63769$, $p=0.0001$) as noted in Figures 5, 6, 7 I.D. It was also found that entry GPA and Theory of Design were significantly correlated, however, the correlation coefficient is very low ($r=0.15121$, $p=0.0193$) as seen in Figure 8 I.D.

Summary tables of all data analysis for Interior Design are found in Table 10.

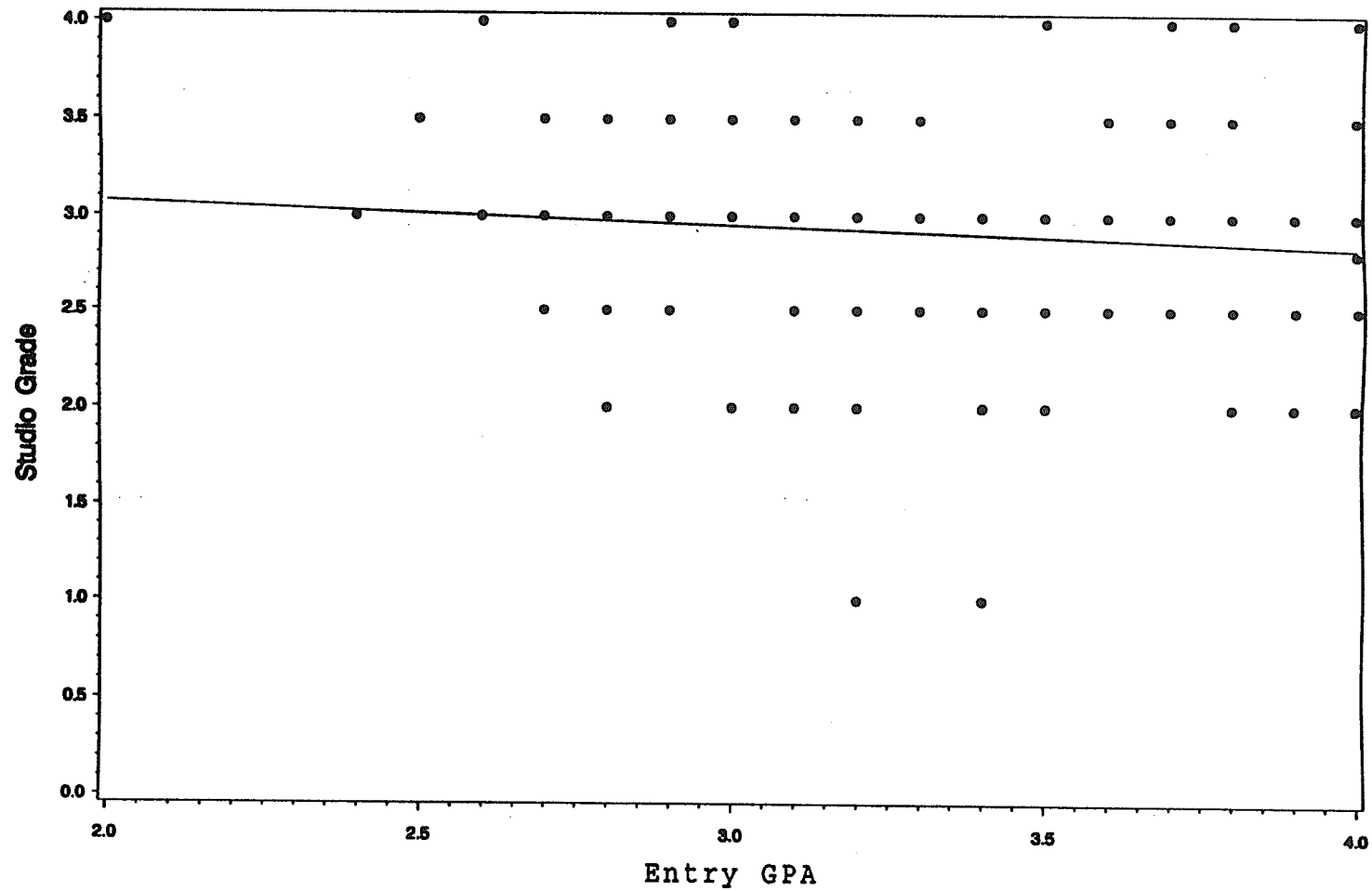
Interior Design Students
University of Manitoba – 1986 to 1990



Prediction of Studio Grade in Year 1 from Entry GPA

Figure 1 I.D.

Interior Design Students University of Manitoba – 1986 to 1990



Prediction of Studio Grade in Year 2 from Entry GPA

Figure 2 I.D.

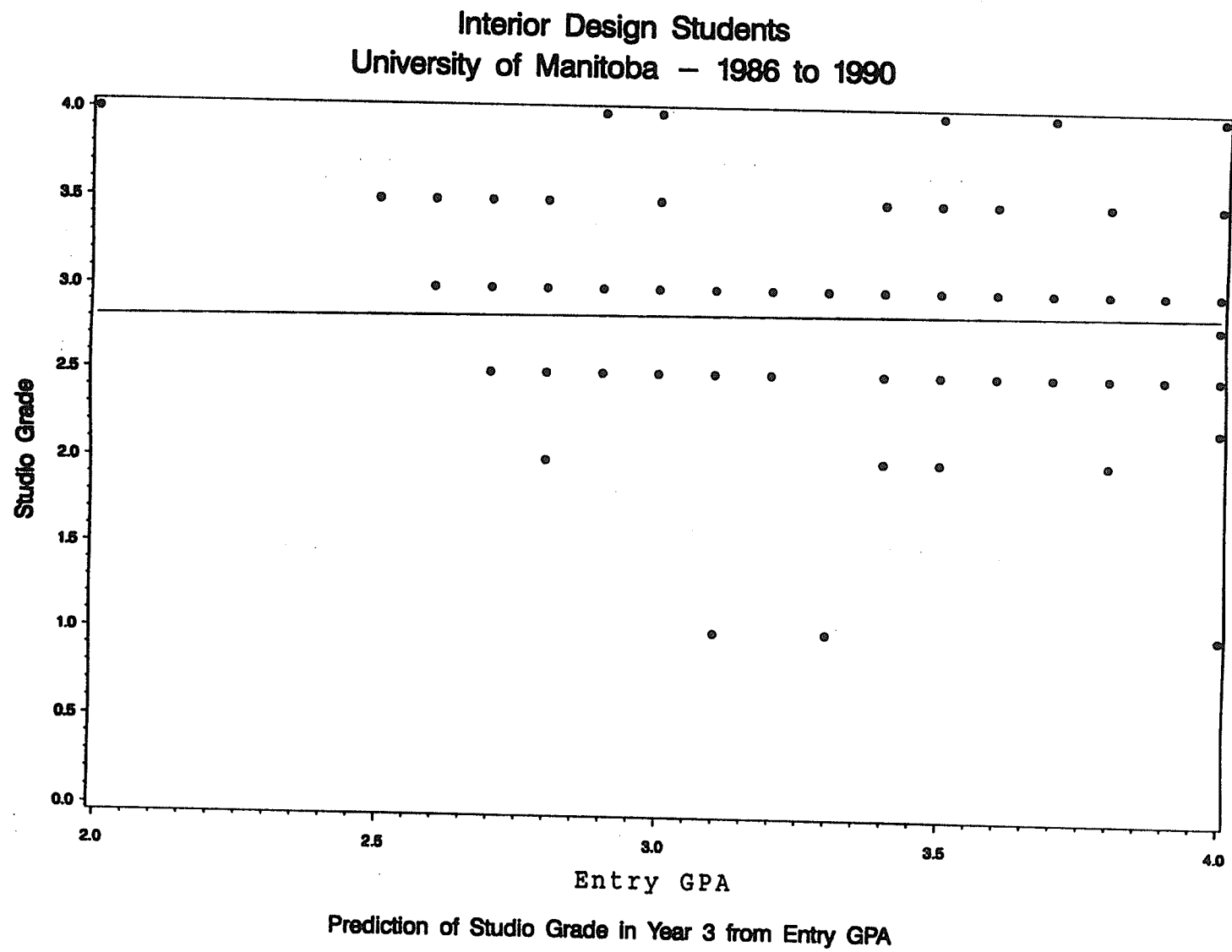
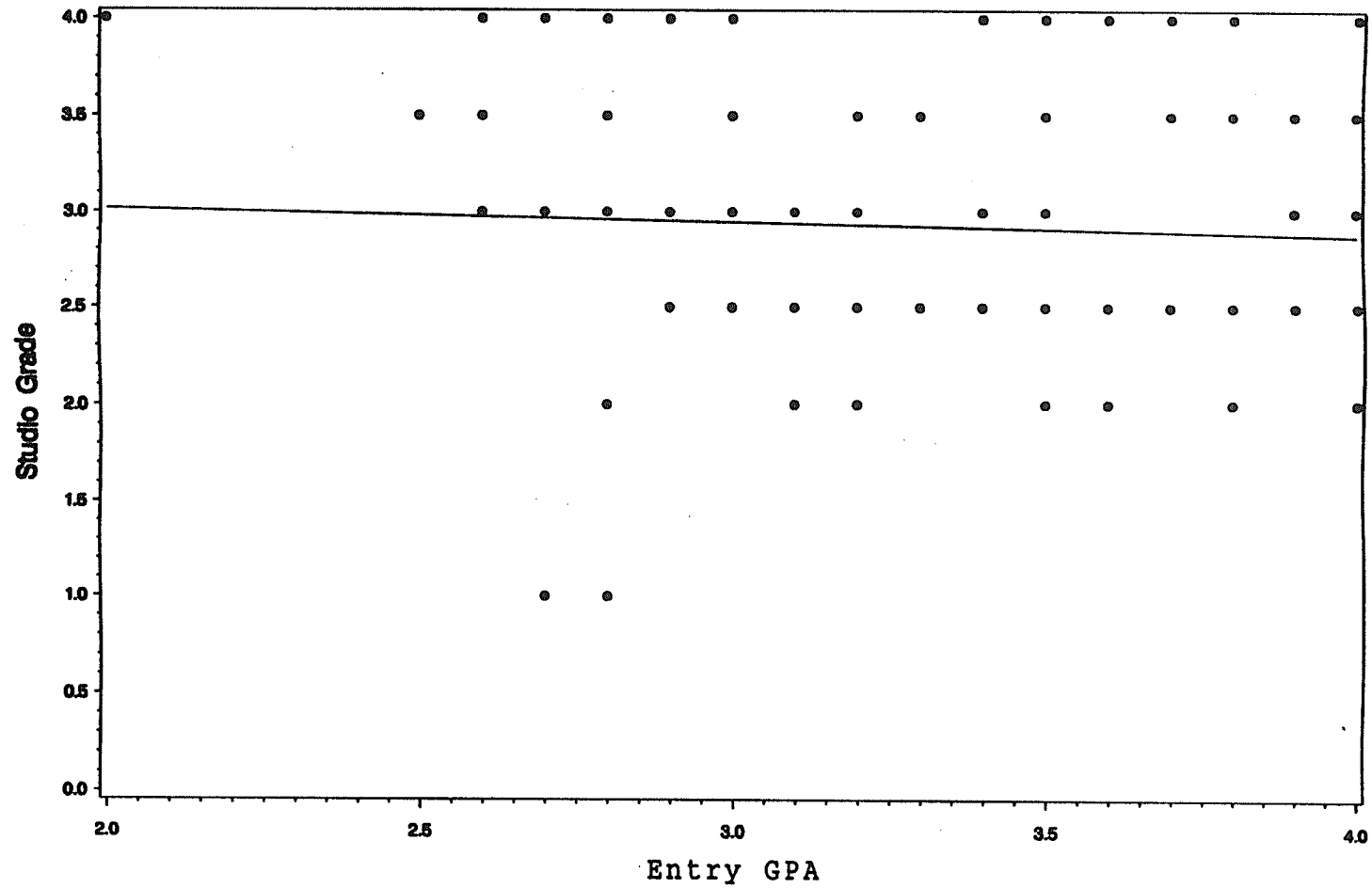


Figure 3 I.D.

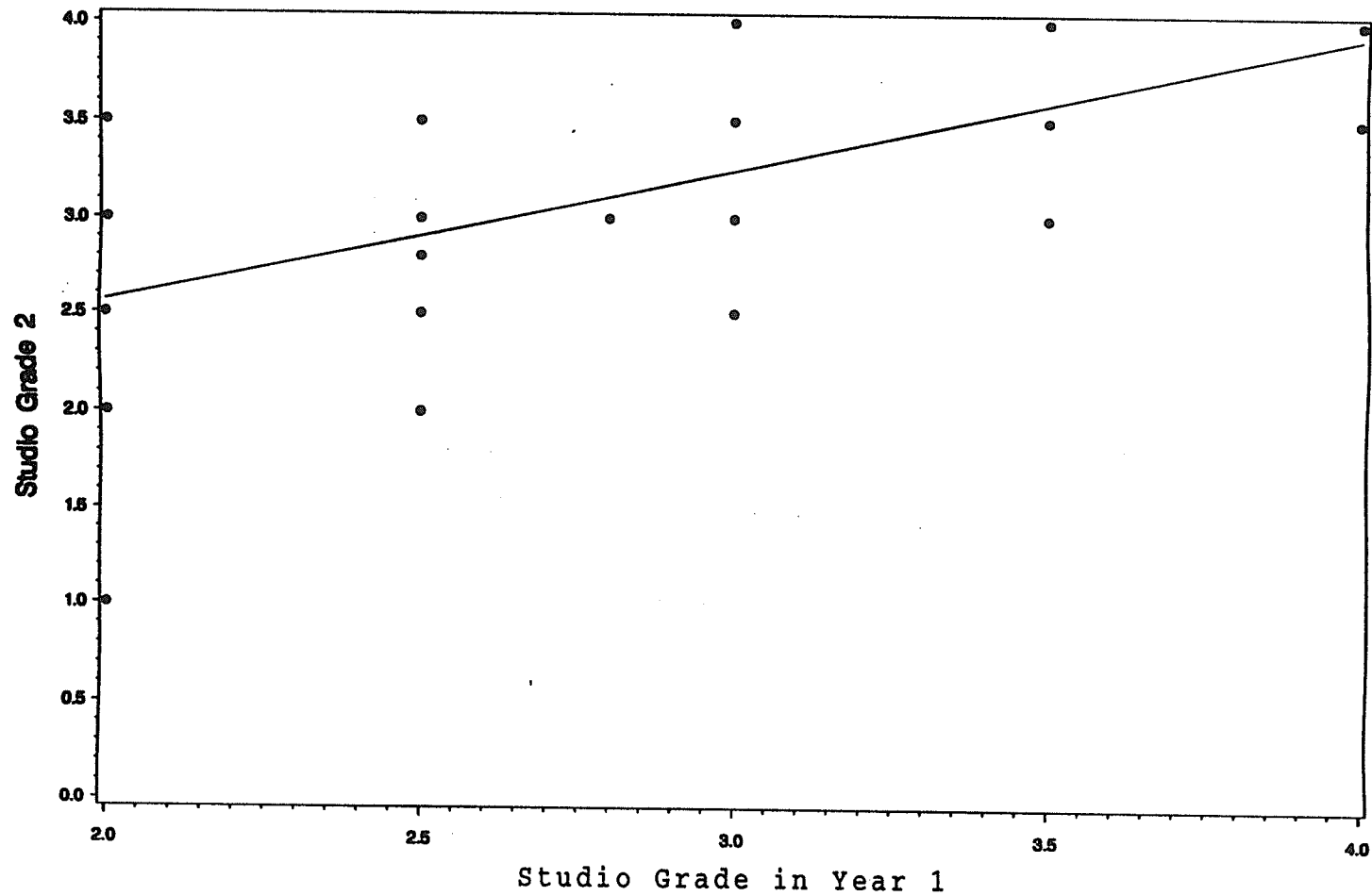
Interior Design Students University of Manitoba – 1986 to 1990



Prediction of Studio Grade in Year 4 from Entry GPA

Figure 4 I.D.

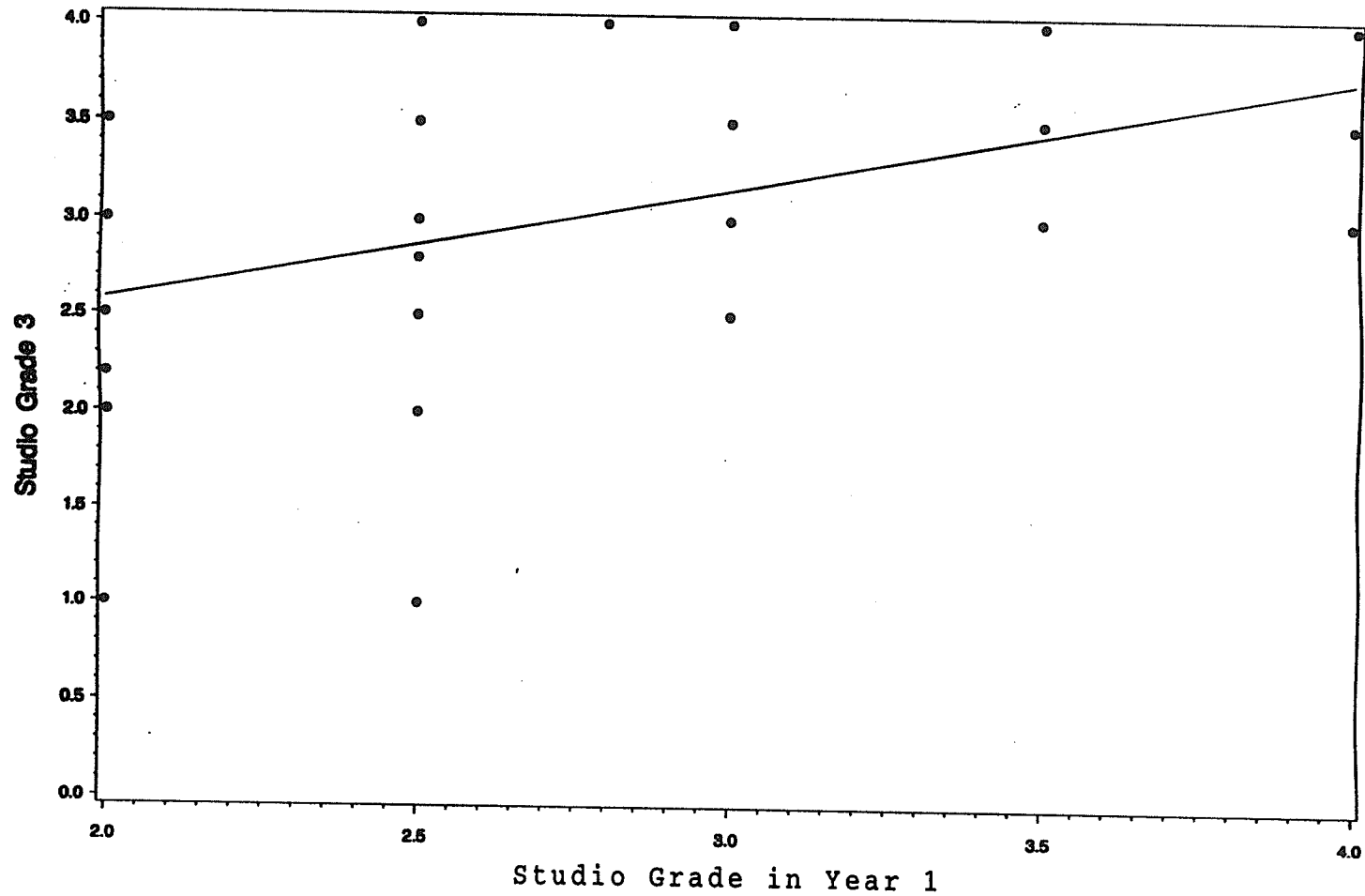
Interior Design Students
University of Manitoba – 1986 to 1990



Prediction of Studio Grade in Year 2 from Studio Grade in Year 1

Figure 5 I.D.

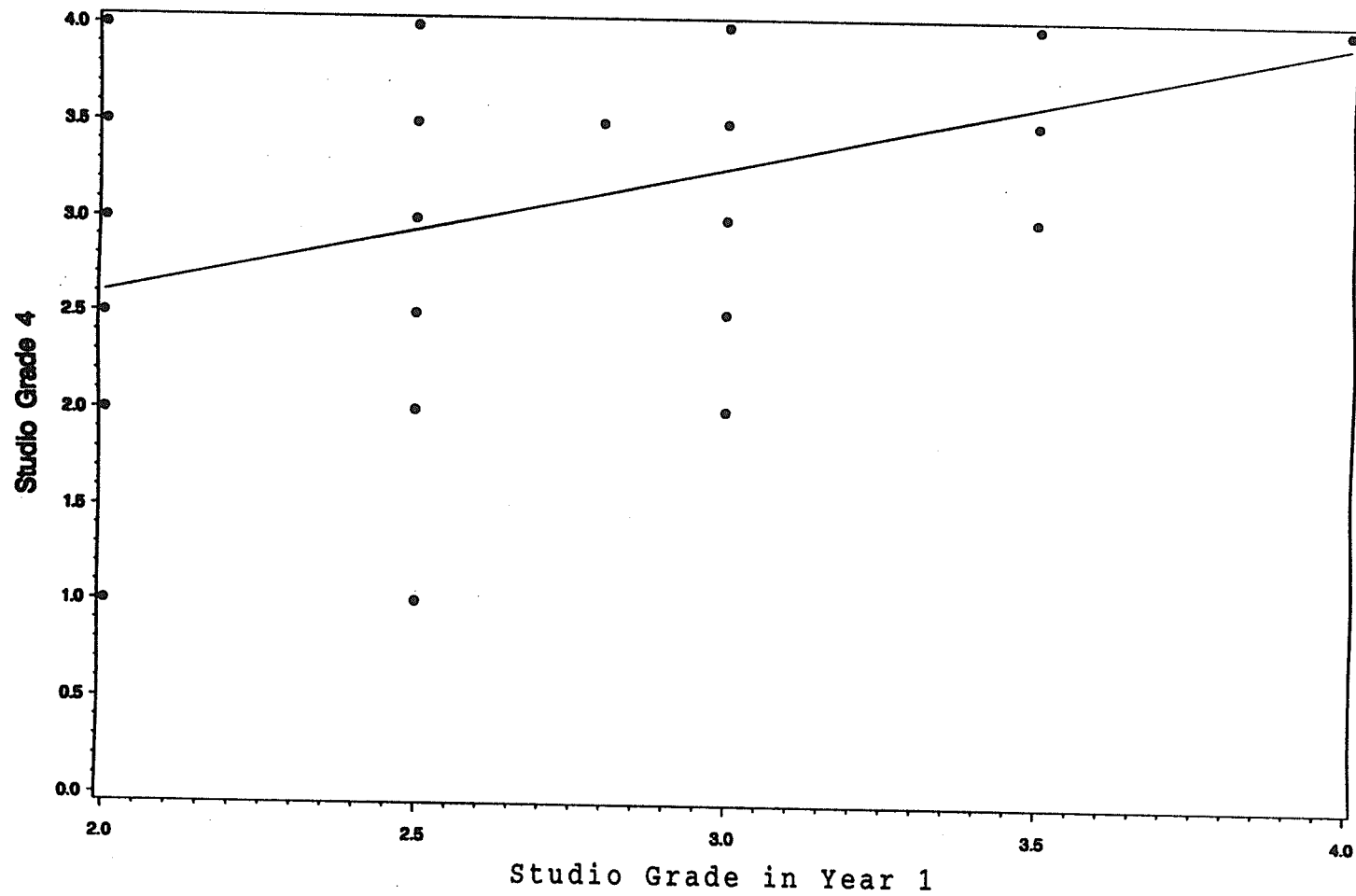
Interior Design Students
University of Manitoba – 1986 to 1990



Prediction of Studio Grade in Year 3 from Studio Grade in Year 1

Figure 6 I.D.

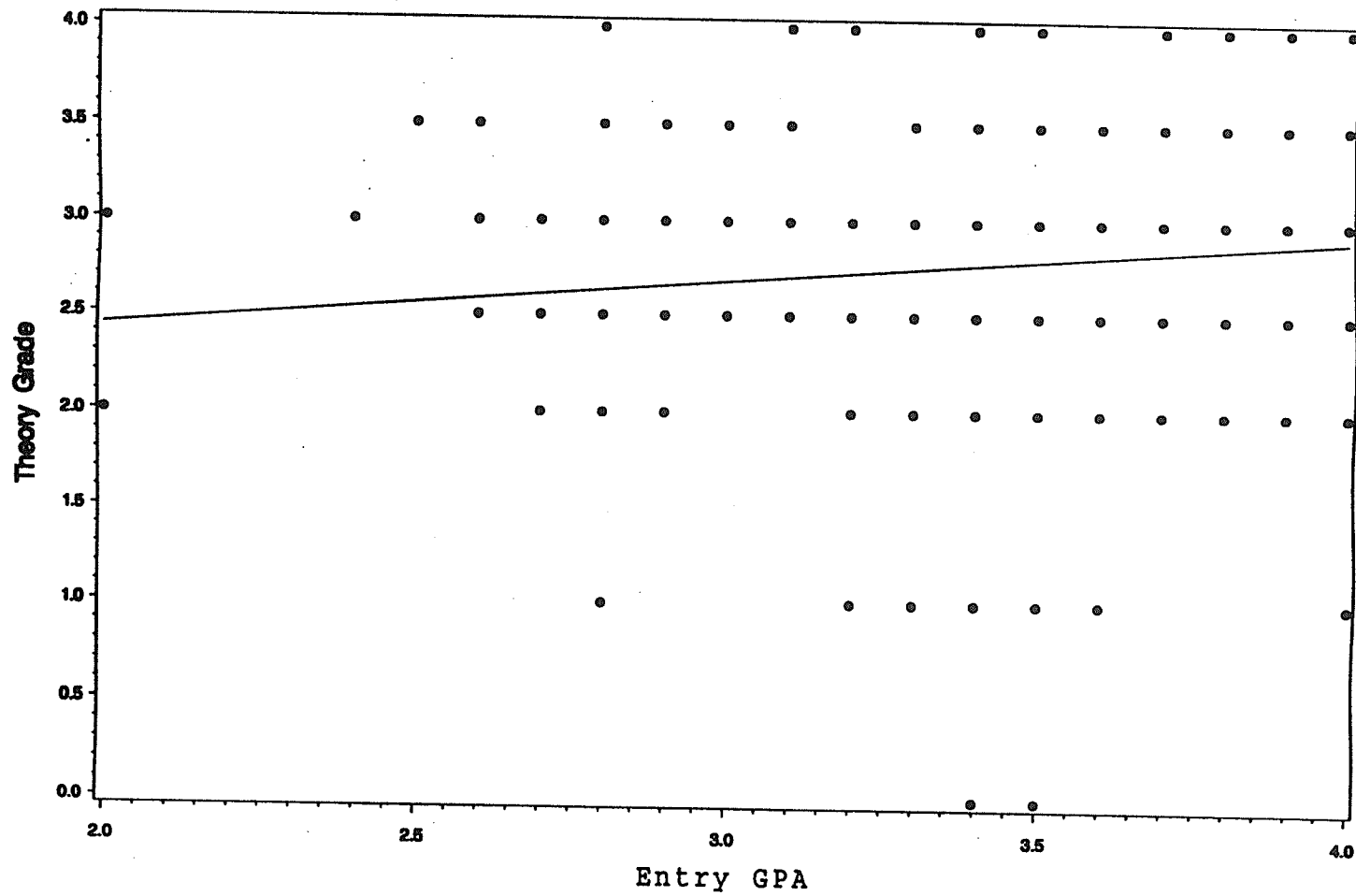
Interior Design Students
University of Manitoba – 1986 to 1990



Prediction of Studio Grade in Year 4 from Studio Grade in Year 1

Figure 7 I.D.

Interior Design Students University of Manitoba – 1986 to 1990



Prediction of Theory Grade in Year 1 from Entry GPA

Figure 8 I.D.

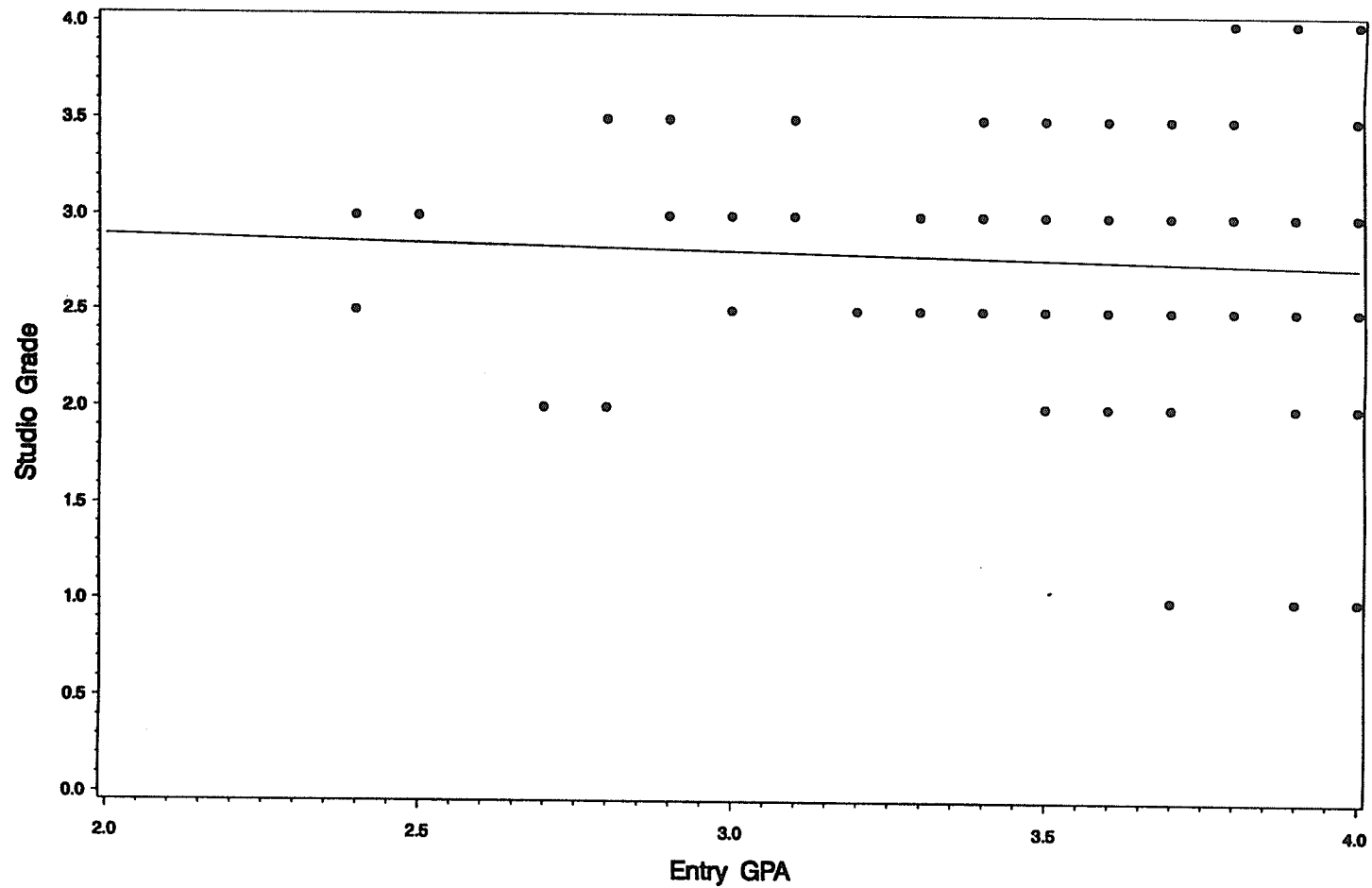
DEPARTMENT OF
ENVIRONMENTAL STUDIES DATA

Figure 1 E.S. shows the correlation between entry GPA and design studio 1 for 146 students who were accepted into the programme of studies in Environmental Studies between 1989 and including 1991. Mean GPA of the five classes ranged from 3.76 to 3.81. There is no significant correlation between GPA and Studio 1. ($r=-0.04616$, $p=.5801$). Similarly, figures 2, 3, 4, 5 and 6 E.S. show that no significant correlation between entry GPA and the remaining studio courses were identified throughout the program.

As in the Interior Design data, there was a highly significant correlation between studio 1 and the remaining studio courses throughout the program. e.g. ($r=0.80228$, $p=0.0001$). The data is shown in Figures 7, 8, 9, 10 and 11 E.S.

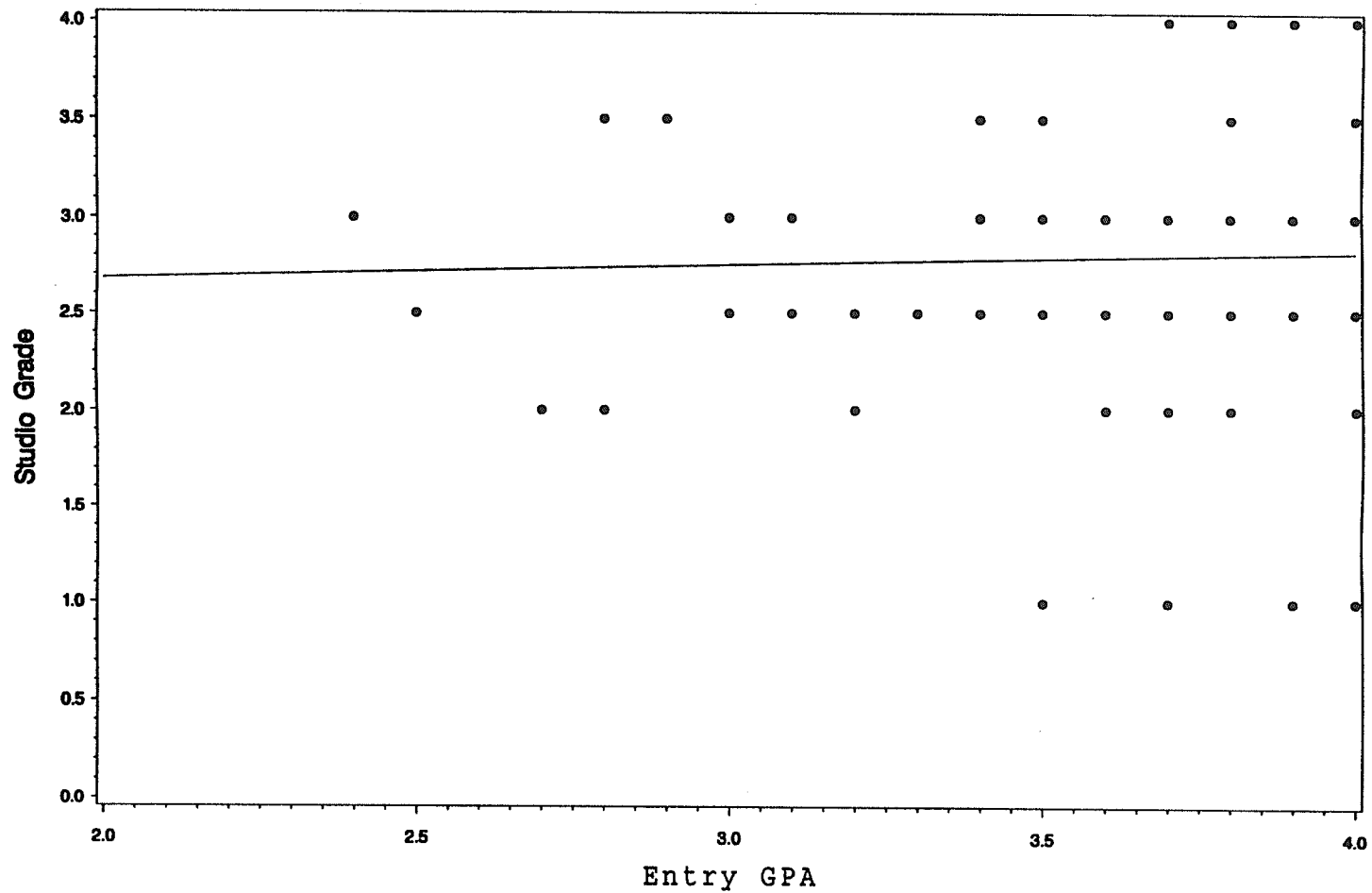
Summary tables of all data analysis for Environmental Studies are found in Tables 11 and 12.

Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of First Studio Grade in Year 1 from Entry GPA

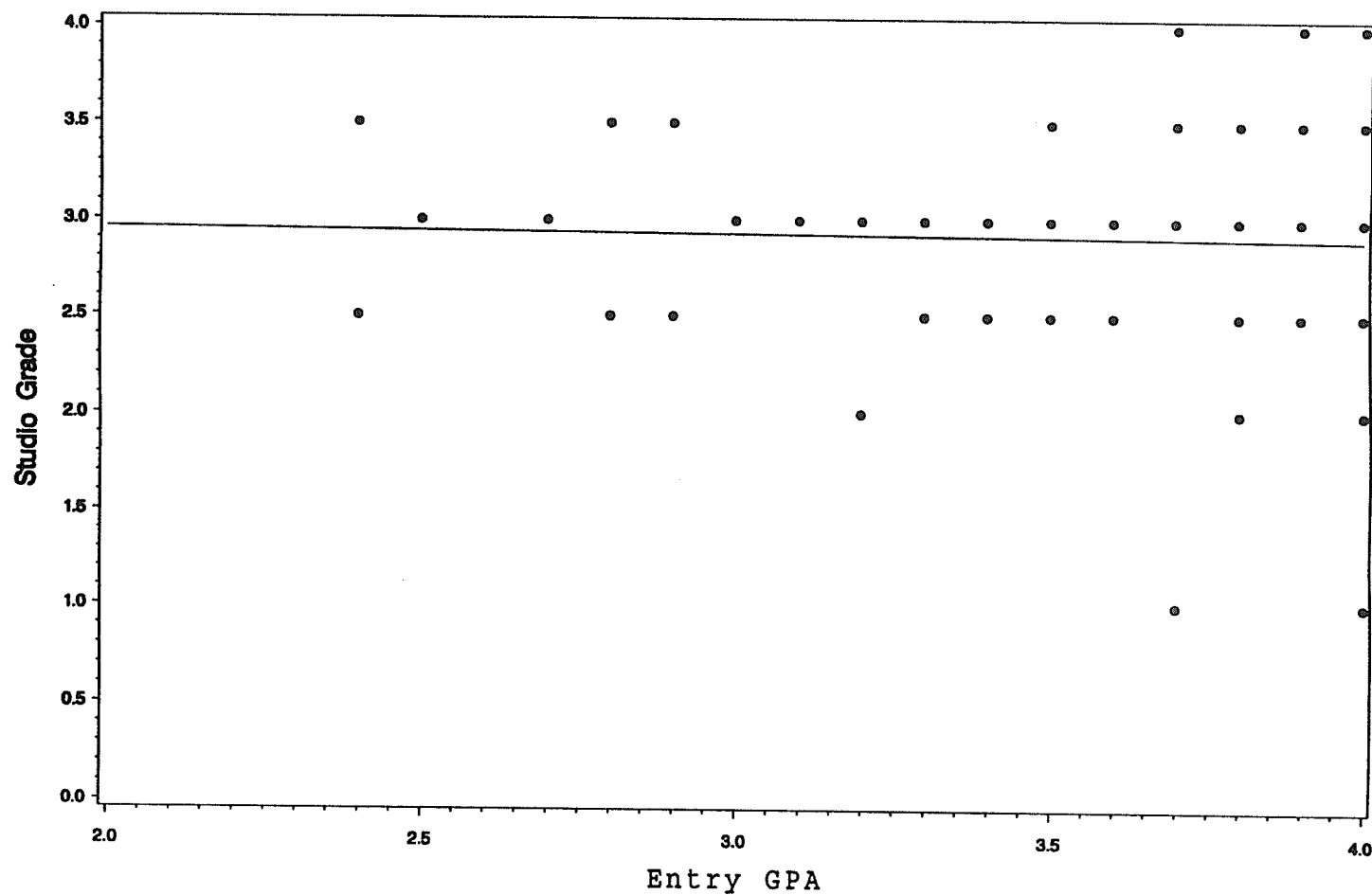
Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of Second Studio Grade in Year 1 from Entry GPA

Figure 2 E.S.

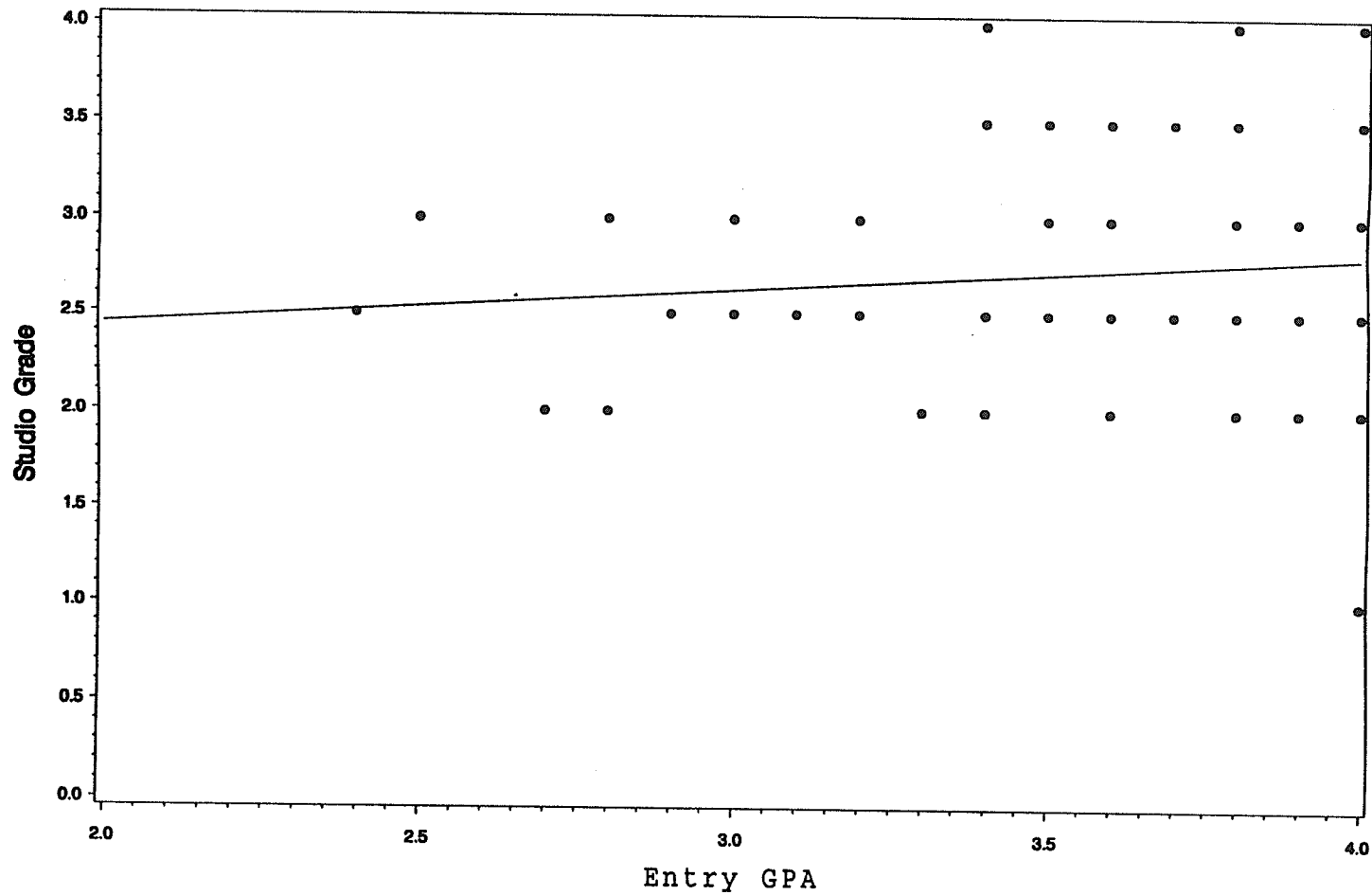
Environmental Studies Students University of Manitoba – 1989 to 1991



Prediction of First Studio Grade in Year 2 from Entry GPA

Figure 3 E.S.

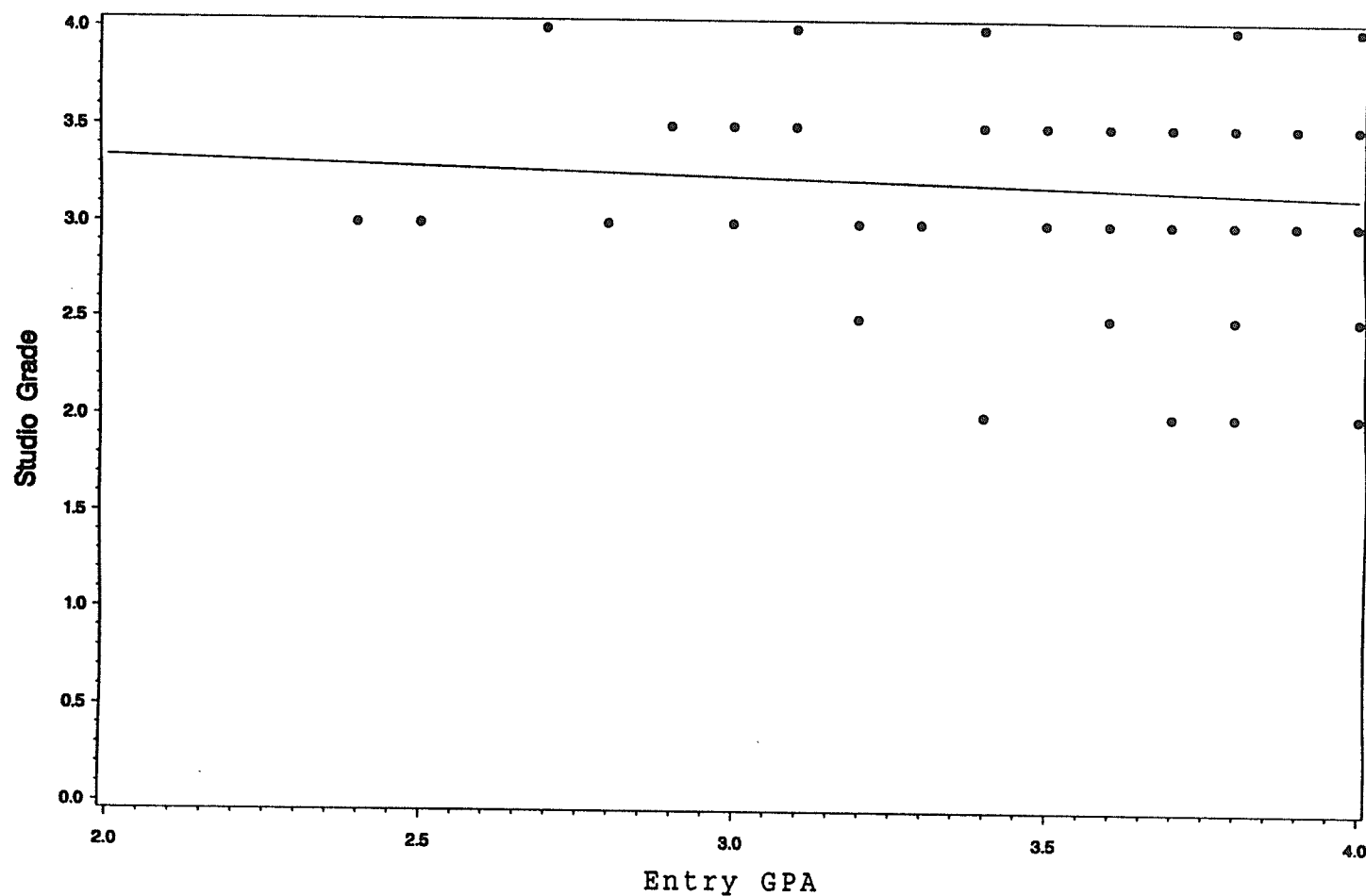
Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of Second Studio Grade in Year 2 from Entry GPA

Figure 4 E.S.

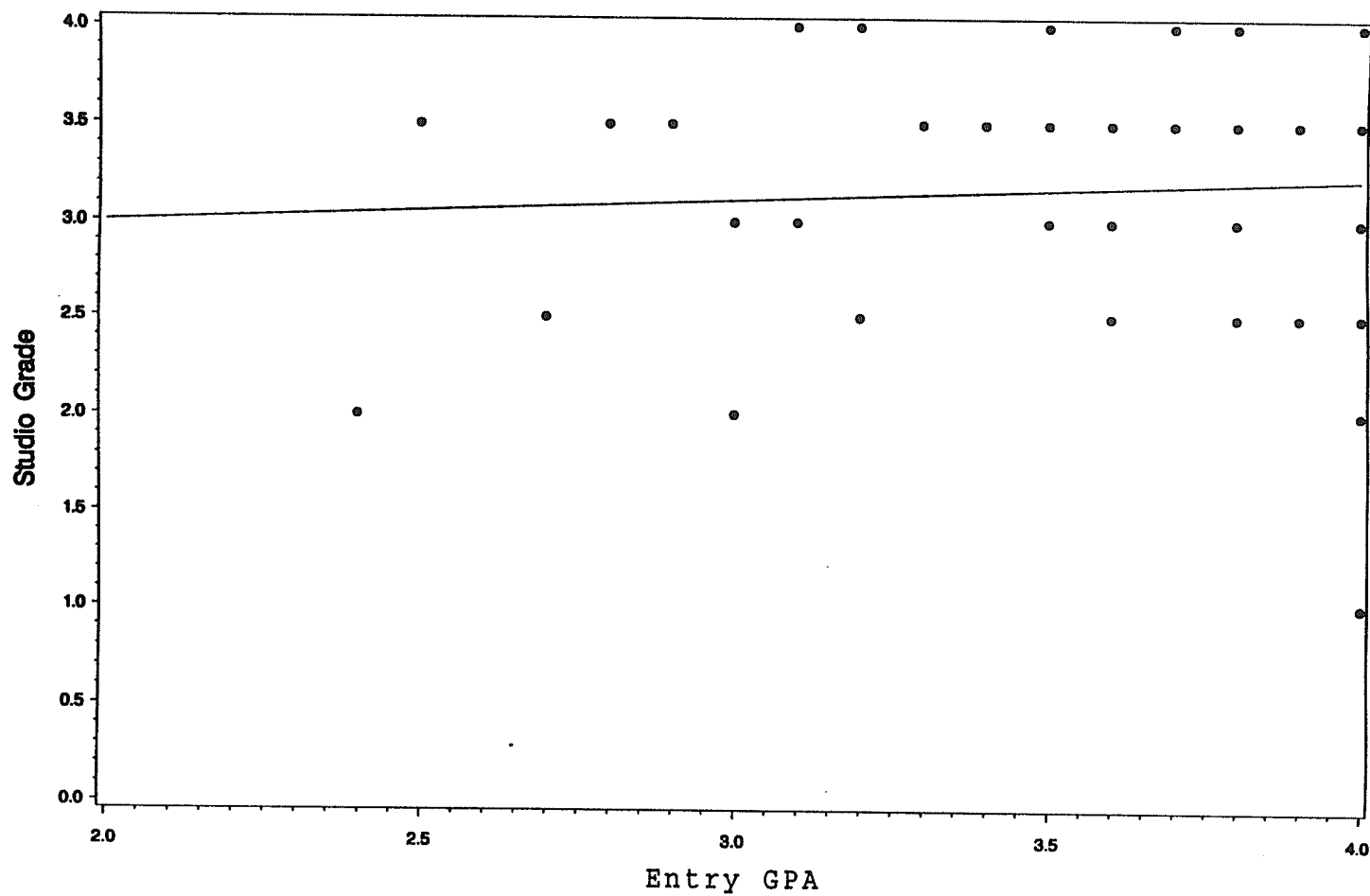
Environmental Studies Students University of Manitoba – 1989 to 1991



Prediction of First Studio Grade in Year 3 from Entry GPA

Figure 5 E.S.

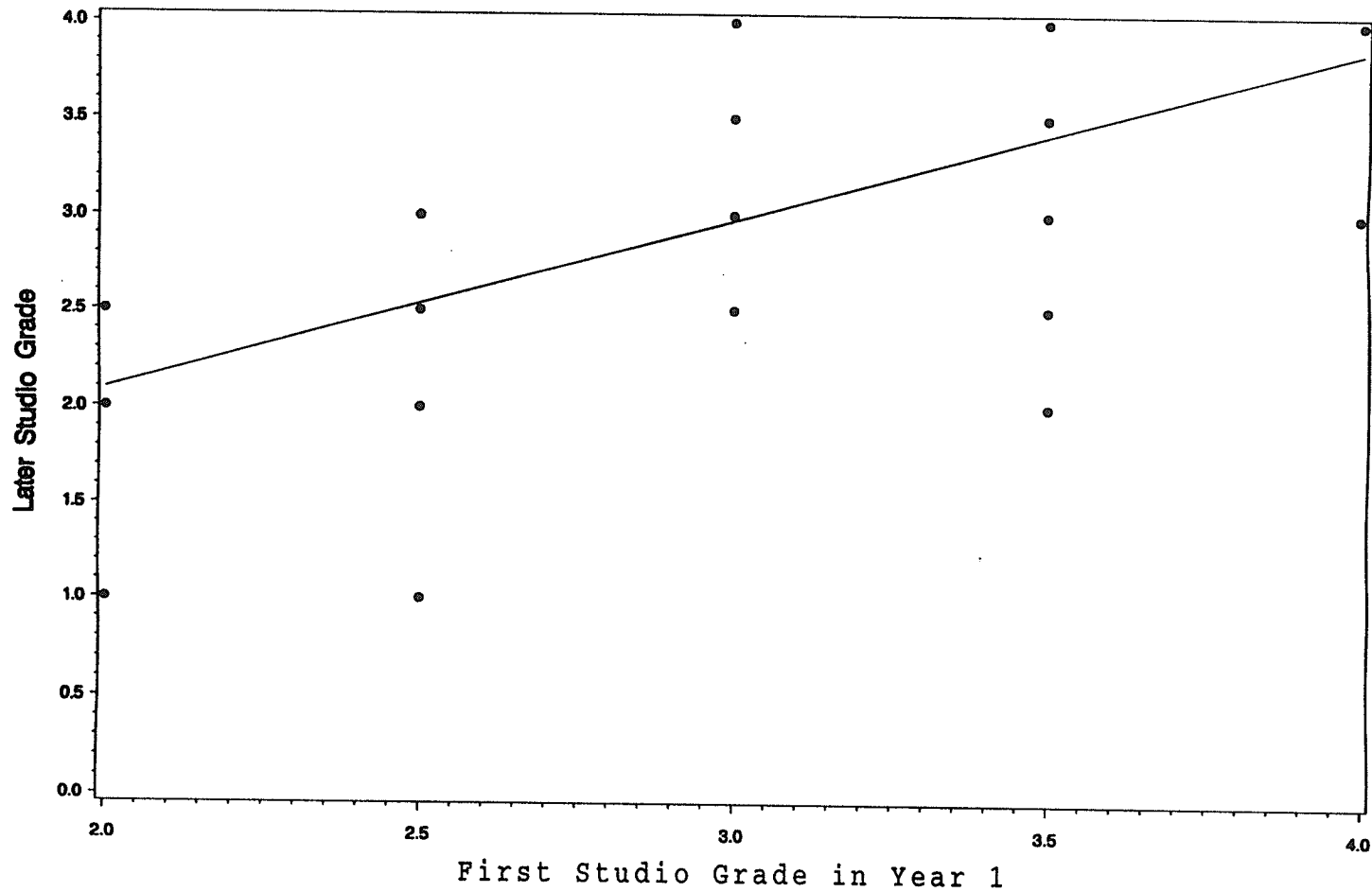
Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of Second Studio Grade in Year 3 from Entry GPA

Figure 6 E.S.

Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of 2nd Studio Grade in Year 1 from 1st Studio Grade in Year 1

Figure 7 E.S.

Environmental Studies Students
University of Manitoba – 1989 to 1991

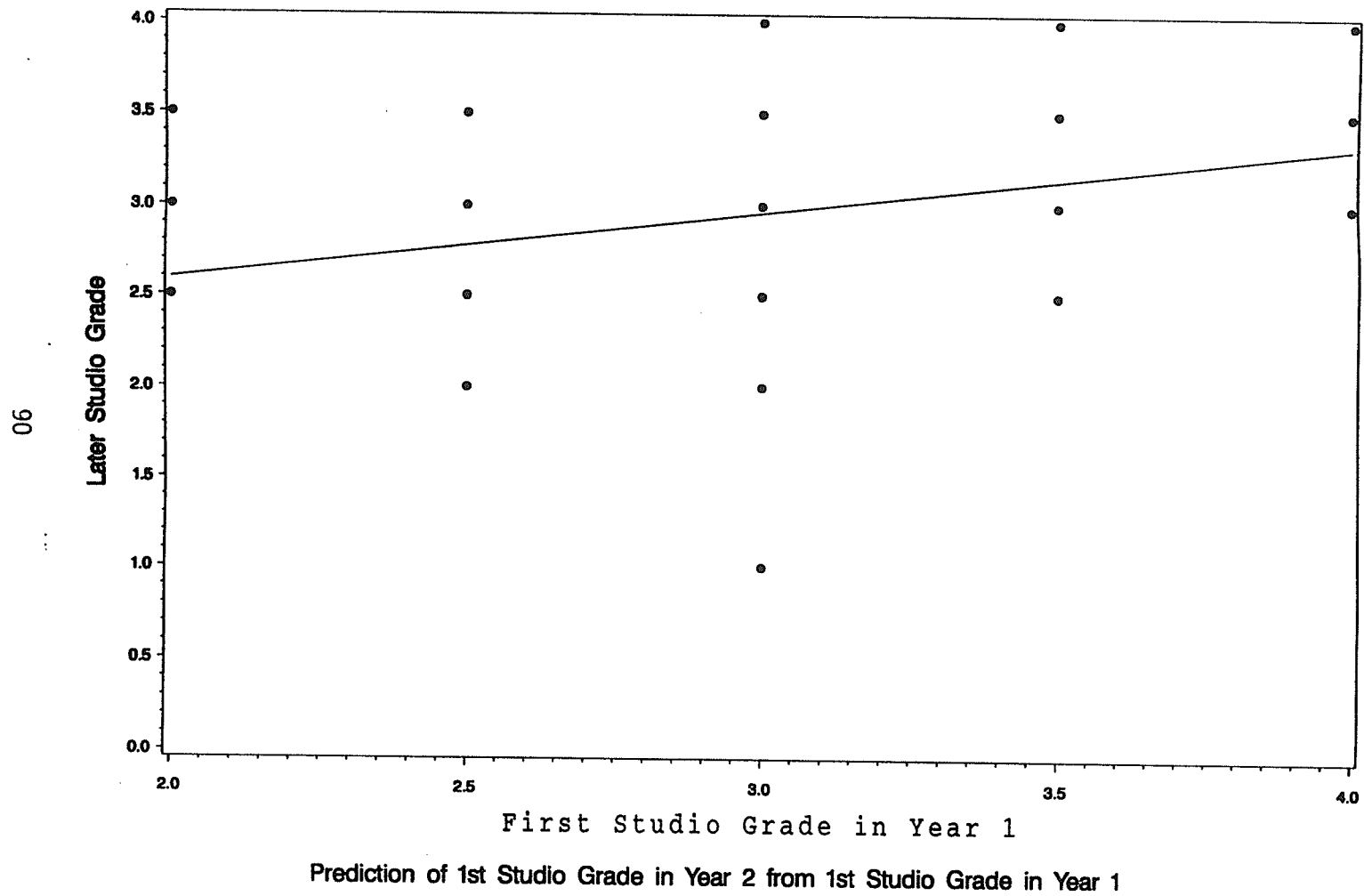
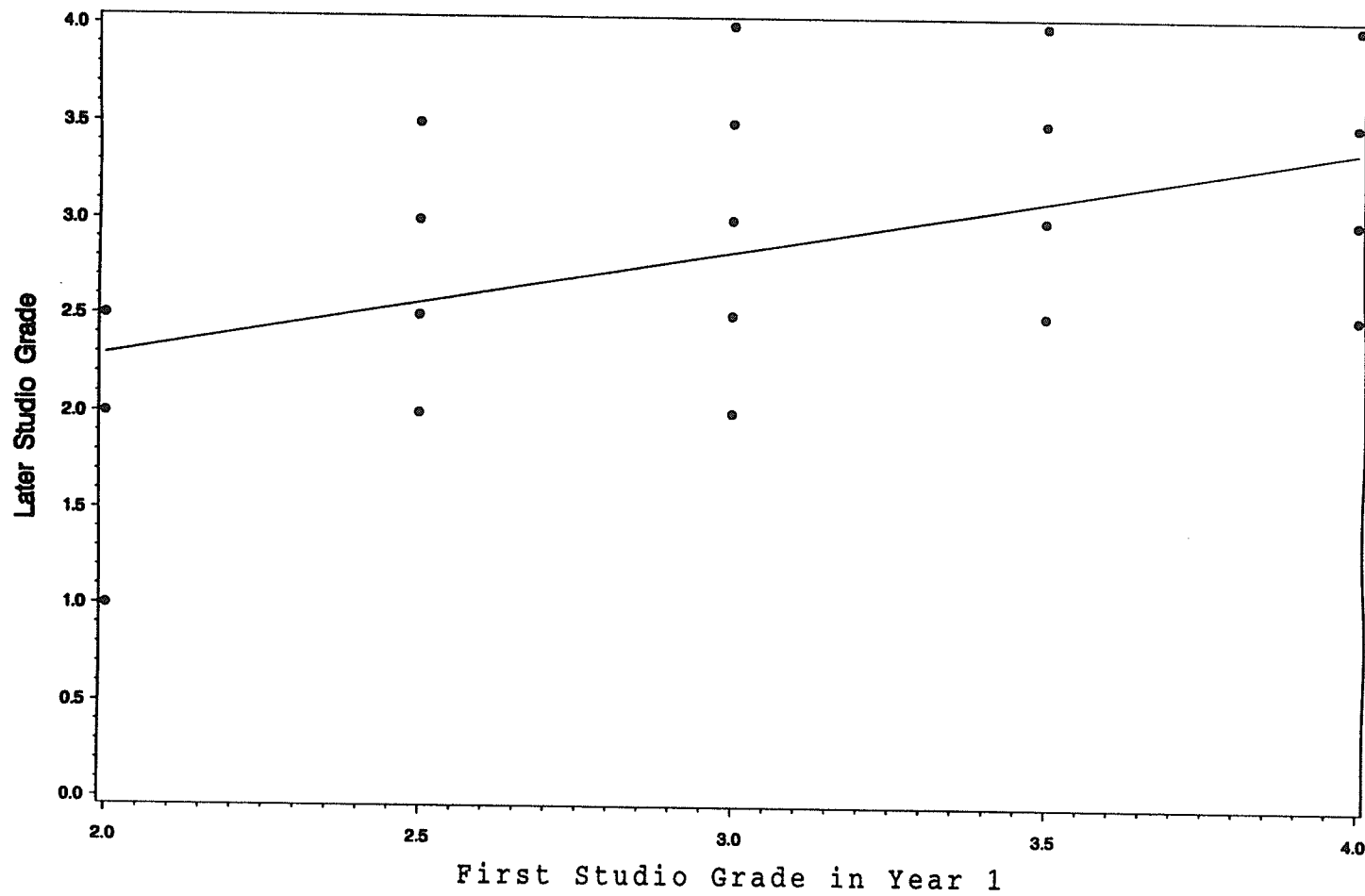


Figure 8 E.S.

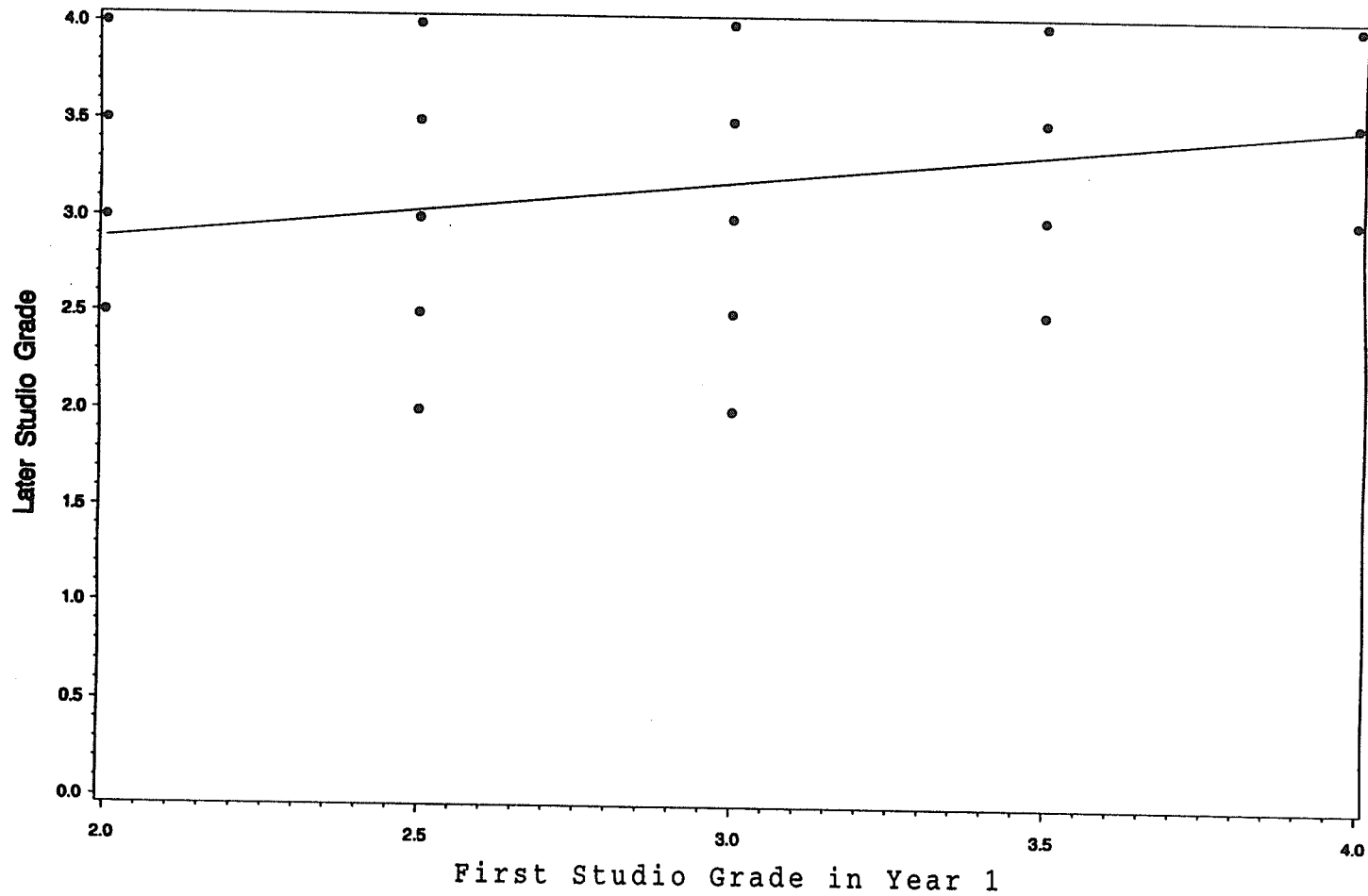
Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of 2nd Studio Grade in Year 2 from 1st Studio Grade in Year 1

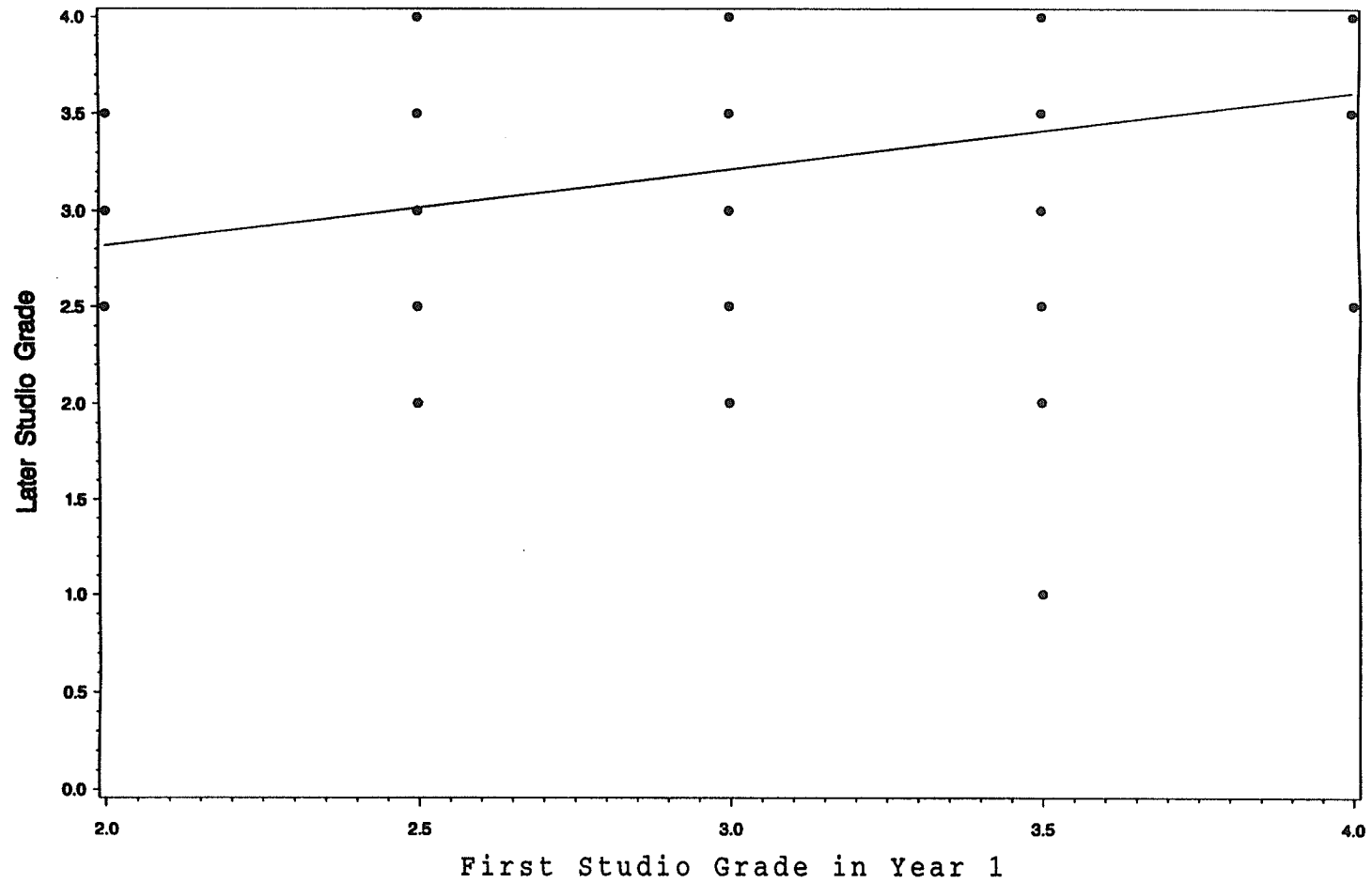
Figure 9 E.S.

Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of 1st Studio Grade in Year 3 from 1st Studio Grade in Year 1

Environmental Studies Students
University of Manitoba – 1989 to 1991



Prediction of 2nd Studio Grade in Year 3 from 1st Studio Grade in Year 1

Figure 11 E.S.

UNIVERSITY OF TORONTO DATA

Figure T1 shows the correlation between the Toronto admissions test and design studio 1 for 60 students who were accepted into the programme of studies in Architecture and Landscape Architecture. There is a significant correlation coefficient between the entry test and Studio 1. ($r=0.25364$, $p=0.0505$).

Of these 60 students, grade point averages were available for 32. When students are pre-selected by the Toronto entry test, those with higher GPA scores have the highest rate of success in the programme. ($r=0.49232$, $p=0.0042$). This significant correlation found on data Table13 in the appendix suggests that using both criteria gives us a strong predictor for success in the program of studies. It should be noted, however, that GPA was not available for 28 of these students. A further study should be carried out to confirm this finding.

As you will see in Figures T2 and T3, the Toronto data confirms the findings in the Manitoba data with the most significant correlation coefficients found between Studio 1 and the other studio years.

There was no significant correlation found between the University of Manitoba students' GPA and the Toronto admission test grades. This is an extremely small sample group. ($r=0.1580$, $p=0.735$). Correlations can be seen in Figure T4.

Summary tables of all data analysis for the Toronto Study are found in Table 13.

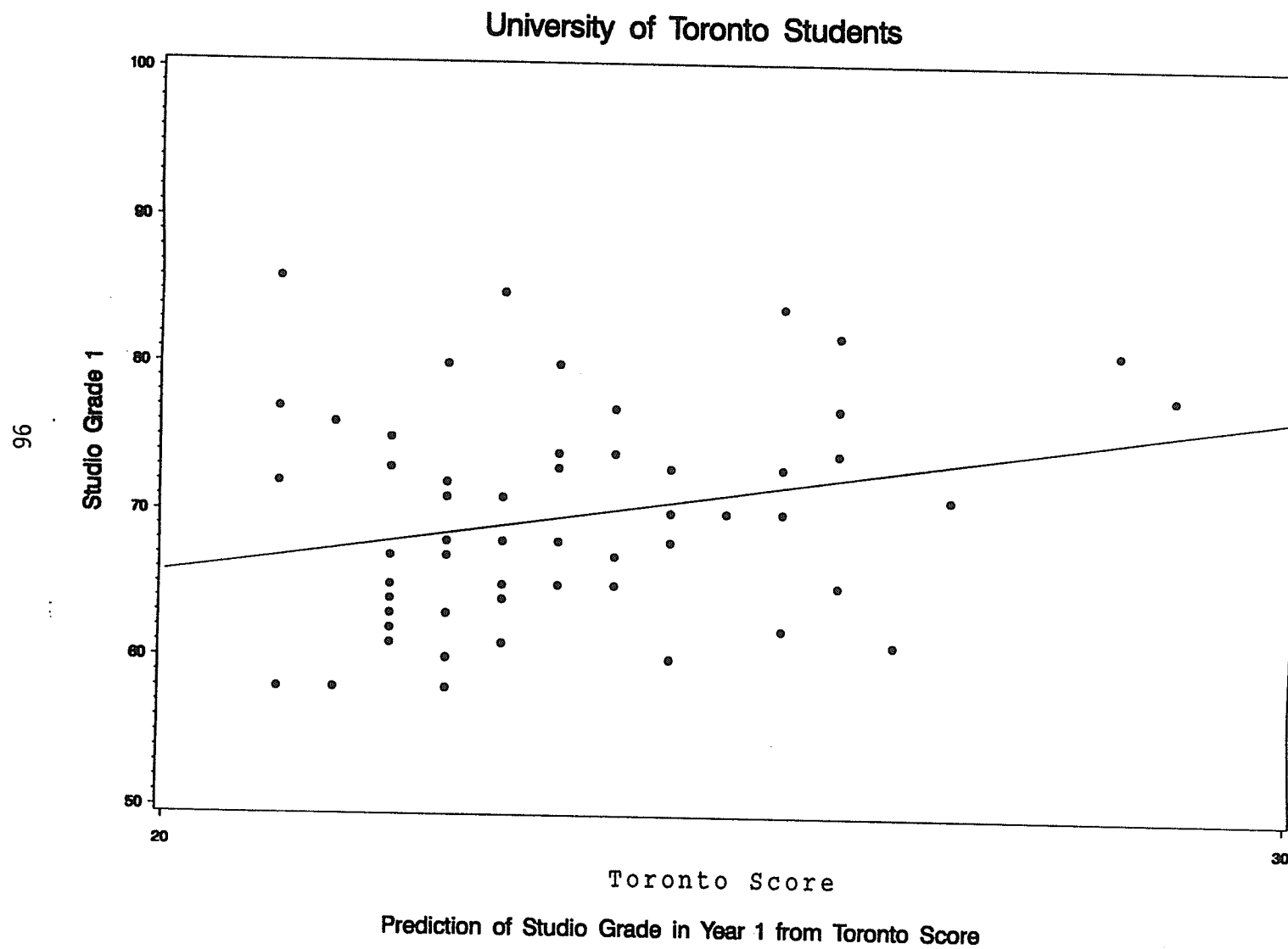


Figure T1

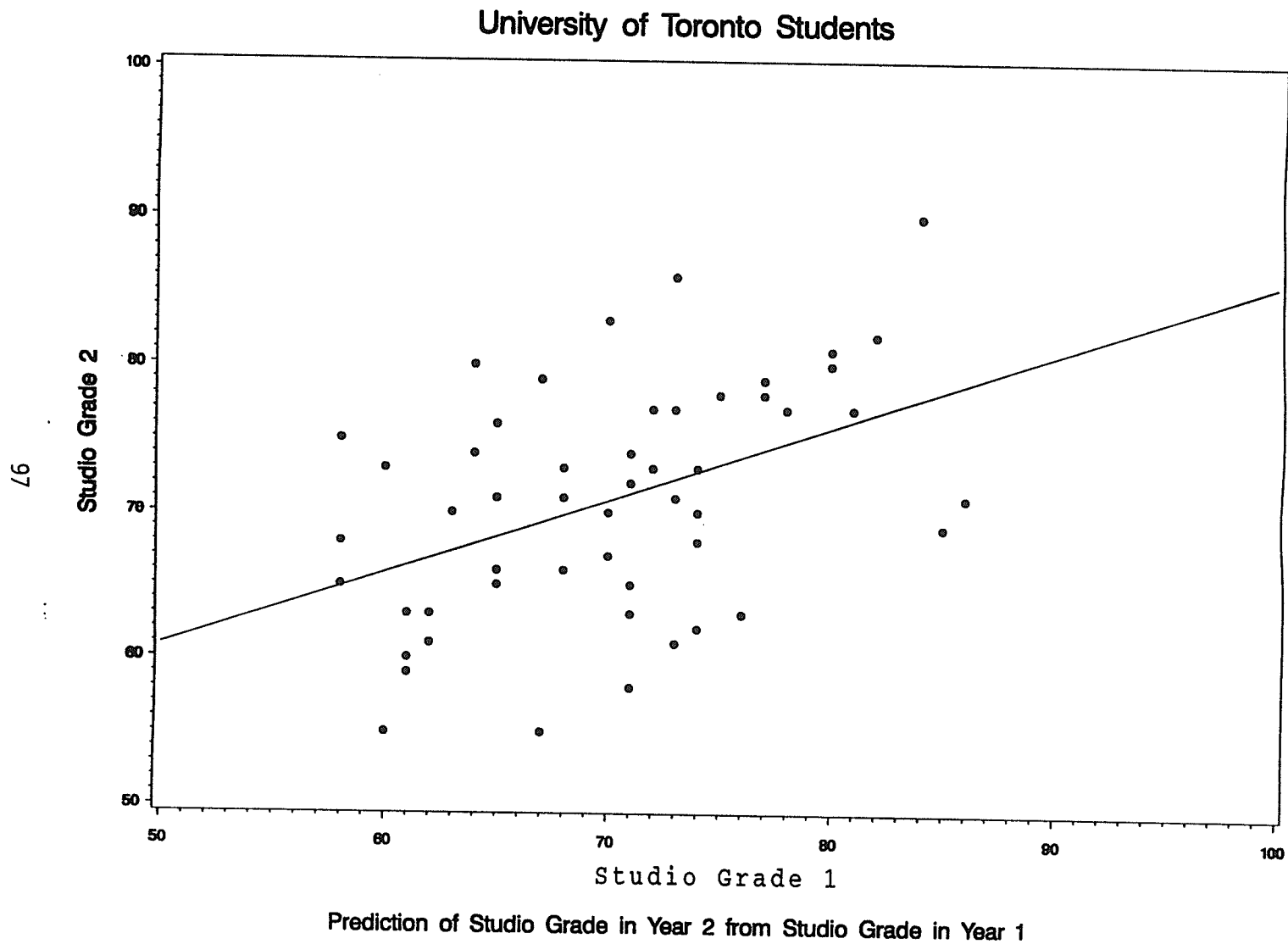


Figure T2

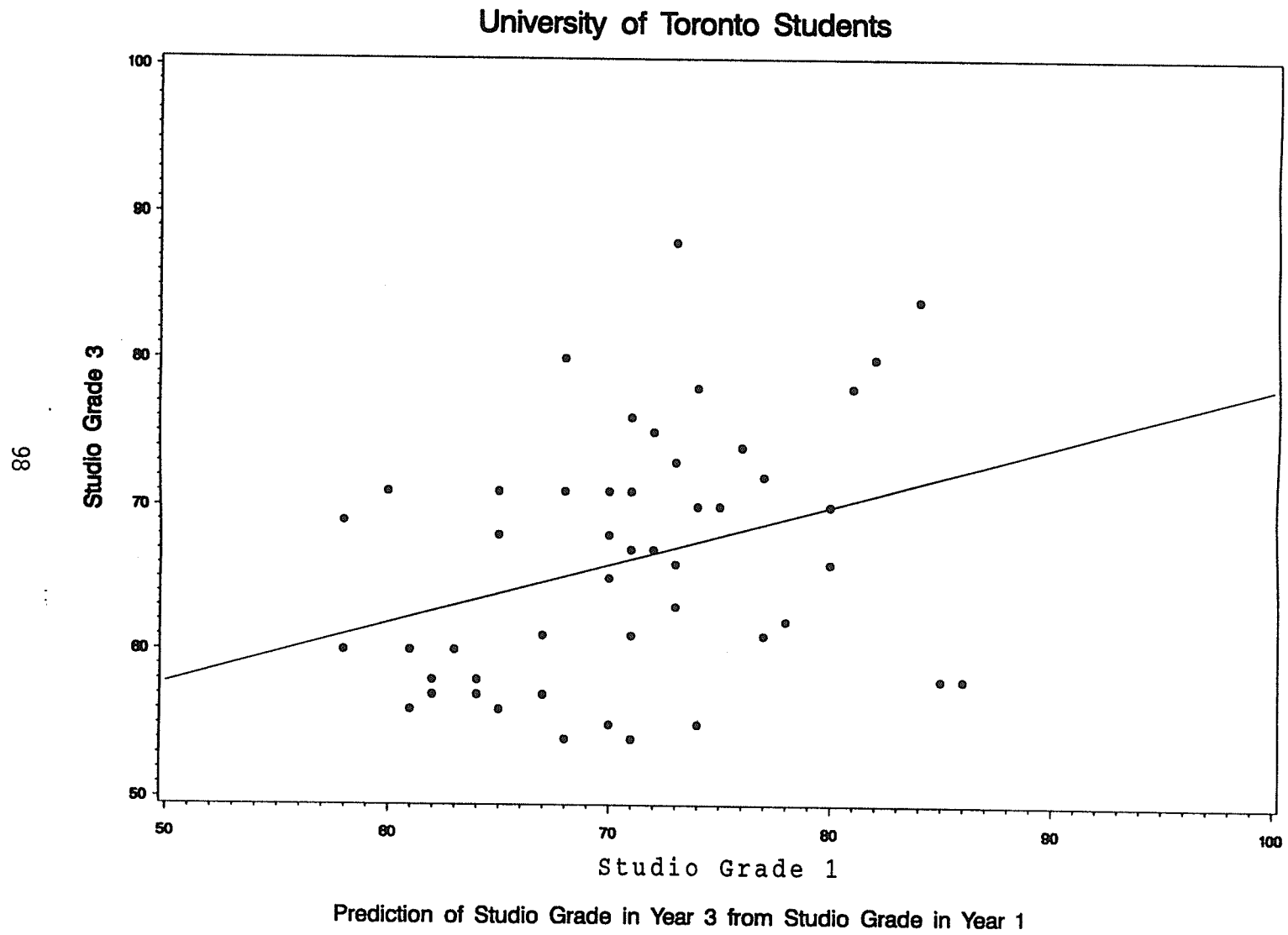


Figure T3

DISCUSSION

The findings in the correlation studies between GPA and studio course work confirm an aspect of Gilchrist's findings in her study on "dimensions of talent" and their interactive effects on measures of personality, creative activities, and convergent and divergent thinking skills.⁶ It appears that there is little or no relationship between "academic achievement levels" and "creative activity variables", using Gilchrist's terminology. If the skills and thinking processes required for design thinking are different from those required to attain high academic grades in science and general arts course work, it is not surprising that the data were so consistent in showing no correlation between GPA and studio design grades.

The thesis was able to study only a sample of students who had already been accepted to the Faculty of Architecture using current admissions criteria. Starting with a pre-selected group limited the extent of this study. There is no way to determine if the students with lower GPA who were not accepted into the program would have scored as well or not as well as the pre-selected students. The Toronto study, however, which doesn't select on the basis of GPA, seems to indicate that the students with lower GPA may do as well (or

⁶ Margaret B. Gilchrist *Genetic Psychology Monographs*, 1982, 106 261-318 Monash University, Clayton, Victoria, Australia

better).

The most interesting observation from the study is the highly significant correlation between the grades achieved in the first year design studio course and the grades achieved in subsequent years of design studio. There is a consistently high correlation linked to a consistent p value under .0001. There appear to be identifiable traits that predict design skills. Those students who show their ability in their first studio experience, show their ability throughout the remainder of the studio programmes. Since there is no correlation between GPA and studio 1, those traits necessary for success in studio are clearly not related to GPA.

The Toronto admissions test appears to be a good predictor for success in design studio courses but not as good as the studio one indicator. The Toronto admissions test score is a much more predictable indicator of success in subsequent design studio courses than the University of Manitoba GPA score.

There are uncertain findings in the correlations between Theory courses and GPA scores. Initially Theory was chosen for the comparative study because of its similarity to didactic course work used to determine GPA scores. It is possible that the Theory course has a mix of requirements, some of which

relate to linguistic understanding, but other components which require divergent thinking skills. This may be an explanation for the inconclusive information found in the analysis.

Only 131 of 253 students completed the programme of studies in Interior Design in the four year period following entry, and 94 of 146 students completed the programme of studies in Environmental Studies in the three year period following entry. It is worth noting that the grades of those students who completed their studies in the standard period of time were not significantly different from those who took longer (data not shown).

Although we presently allow students flexibility in taking courses over a long period of time, this observation suggests that we should seriously consider options for course delivery, access to information, summer studios, and block courses in order to offer more efficient and economical course delivery for our students.

The main body of the thesis was written in France in 1994. The University of Marseille (Luminy) houses a School of Architecture and Design. Gerard Lebouchet, Associate Dean and undergraduate admissions officer, had discussions with me about admissions criteria in Canadian schools. All students in France who have achieved passing grades at the baccalaureate level (secondary education) who wish to study architecture or design are

accepted into courses across the country. Admission selection procedures are made after the first year in the program. Students are permitted to repeat first year and are given a second chance for entry. Currently, students are accepted from all baccalaureate majors. The University of Marseille at Luminy is in the process of determining which of the baccalaureate majors is the best predictor of success for architecture or design. The conclusions of their five year study will be available in 1999.

It was possible to look closely at our students' profile while collecting the data for this thesis. It was very clear that many of the students who are finally accepted into our programme have attempted entry to the program for more than one year. These students did not have the required GPA at first try and continued to take courses until they were accepted. The students were motivated enough to seek alternate routes or to continue to persist with course work. Many of these students have excelled in the programme. Some have achieved honours and gold medals. A simple study could be carried out to test the correlation between our prize winner's performance against their entry GPA, to see whether or not those students who perform well have high entry grade point averages.

C H A P T E R F I V E

RECOMMENDATIONS AND CONCLUSION

Since 1994, I have had the opportunity to direct a new program in the Faculty of Architecture at the University of Manitoba. The development of the programme, which links industry, professionals, the university and the community in mutually beneficial activities, has taken me away from the teaching role I held when I began this research. As director of the Partners Program, I have gained insight into issues related to this thesis; issues which put the question of entry criteria into a larger context.

Many changes have occurred since the beginnings of this study in 1986. The most profound is the changing role of the university in relationship to relevance and accountability. The Faculty of Architecture is in competition for survival within the university itself, and must "prove" it's relevance by delivering an excellent education to a group of sincere and motivated students. Our role is twofold; the first is to insure our students receive an education that will enable them to enter the broad world of design in the workplace. The second is to educate the public on the importance of the role of design in the community to insure the "workplace " continues to flourish. The implications here are that the university and community must work

together in a trusting and mutually beneficial way. Our students become emissaries in the public realm, communicating their interest and commitment to the designing of the built environment. This added dimension requires students to have a social conscience and an ability to articulate and communicate an important public message.

Originally, the Faculty of Architecture's sole mission was to graduate a design professional (architect, interior designer, landscape architect, or city planner) who would find work in a professional design or planning office. During the post-war building boom of the 1950s, 60s, and early 70s this was an attainable goal. Demand far surpassed supply and graduates were guaranteed work in practice (often for a lifetime career). Heroes in the design professions led the age of modernism, open space planning, "hi-tech" design, post-modernism and the new free spirit movement. There were opportunities for growth, financial rewards, and self expression.

Being a design professional today does not come with promises of economic security or an abundance of work. Those who chose to enter the field of design do so out of a commitment to an ideal and a desire to make the world a better place. Our students have a strong regard for economic concerns and environmental issues.

Presently, there are new opportunities for our grads. Research into special environments, inter-disciplinary studies, new media technology, and connections with industry all present options for the application of design thinking into new realms. With the broad spectrum of possible employment, and the understanding that one's career will change often during a life time of employment, the question of admissions to design schools takes on an even greater importance.

Given the findings and discussion in this thesis, undergraduate programmes in design and architecture might consider adopting a more flexible admissions policy. Many professional faculties¹ offer places to a percentage of students each year who do not meet the academic requirements for admissions. We, at the Faculty of Architecture, University of Manitoba could experiment with a 10% entry window. A study of performance level on 10 students (of 100) admitted for the 1997-1998 academic year, without the required GPA, but with strong interest in pursuing a design degree, may provide additional evidence for a shift in our admissions policy.

Using a model similar to the one used in France and described in Chapter Four of the thesis, the Faculty of Architecture could open it's admission

¹Faculties of: Dental Hygiene, Dentistry, Education, Law, Management, Medicine, Medical Rehabilitation, Pharmacy, Social Work and Nursing

window to accept students who are interested in design (regardless of GPA) and select students to proceed into second year based on evaluation after the first year in the program. Enrollment into our undergraduate programmes has been slightly lower than average since the first year University prerequisite was made mandatory. This becomes an opportunity to admit a new population of design students.

The significant findings in the correlation between studio grades in the first year of the programme and success in design studio courses for the remainder of the programme suggests the possibility of offering a design studio course as a University One selection. This has two advantages; one for the Faculty of Architecture, the other, for all students who take the course. Design studio teaches students to think about things in new ways. All students would benefit from such a course. The faculty could then base an admissions policy on a more predictable indicator; grades from the University One course.

Designing the built environment calls upon the human mind in ways that are different from the disciplines of arts or science. The fundamental needs for technology, appropriateness, and aesthetic fulfilment require both rational and intuitive processes. Uniqueness and acceptability in design are connected to cultural, sociological, economic, and historical influences . A designer uses a range of tools; figural, semantic, symbolic and behavioral. The design

process engages many cognitive skills including use of analogy and metaphor, inversions and rotations and requires a strong understanding of spatial scale and depth perception. Intuition and emotion play roles in the making of design along with rational and logical processes.

If we seek to educate students for the twenty-first century, we cannot rely on grade point average as the sole criterion for acceptance of students to design schools. This study is only the beginning of the search for a new model for admission.

We are living in a time when those designing the built environment must understand both the technical rational approaches to design and the psychological, emotional needs placed within that design. The responsibility to teach new ways of creating an inspirational, functional human environment is dependent upon students who are willing to challenge the norms of our current thinking. With new ways of understanding the capacity of the human brain, we can now better mould both the curriculum and the student.

Curriculum changes are underway now in the Faculty of Architecture. The profile and quality of the student being admitted must also be questioned to insure we are teaching those with the greatest potential for success.

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A P P E N D I X

PAGES 1 TO 9 TORONTO ADMISSIONS TEST

PAGE 10 INTERIOR DESIGN DATA

PAGES 11 TO 12 ENVIRONMENTAL STUDIES DATA

PAGE 13 TORONTO DATA



School of Architecture and Landscape Architecture
University of Toronto 230 College Street, Toronto, Ontario M5S 1A1

Dear Applicant

We are pleased that you have applied to the School of Architecture and Landscape Architecture at the University of Toronto.

Due to limitations of space and resources, it will not be possible to accept all applicants who meet the minimum academic requirements of the University. Consequently, we are obliged to conduct a candidate selection process which involves the examination of completed assignments and a portfolio (see the materials attached). Each candidate is asked to submit all items, together with an assessment fee of \$15.00 (certified cheque or money order only, made payable to University of Toronto) to:

Mrs. Pat Telford
Admissions Committee Secretary
School of Architecture and Landscape Architecture
230 College Street
Toronto, Ontario M5S 1A1

All required submissions must be received by **APRIL 30, 1991**. Assignments and Portfolios received after this date, bearing a later postmark, or lacking the assessment fee, cannot be considered. Candidates are encouraged to make their submissions well in advance of this date. The Committee will assess only complete submissions.

Each candidate's submission (résumé, assignments, portfolio and academic record) is considered by the Admissions Committee. While academic achievement is important, great emphasis is also placed on the assignments and portfolio in the overall evaluation. In most cases it will be possible to inform candidates soon afterwards whether or not there is a place for them, but it may be necessary to establish a short-listed category for a few candidates held in reserve until all available places have been filled. Because of the agreement between the Ontario universities, Ontario Grade 13 candidates will not be informed of the Committee's recommendation until mid-June.

If you change your address, you should inform both the School's Admissions Office and the University's Office of Admissions immediately, so that we can contact you promptly.

Thank you for your interest in studying at our School. We look forward to receiving your completed submission.

Anthony Eardley, Dean
January 1991

Telephone 416-978-6192

PLEASE COMPLETE THE FOLLOWING INFORMATION FORM AND INCLUDE IT TOGETHER WITH YOUR REQUIRED SUBMISSIONS

If there are errors in your address, please indicate them in this box

If you are applying from Ontario Grade 13/OAC, indicate your Mid-Term Average: _____
(Minimum acceptable average is 70%)

If you are applying from a Post-Secondary Institution or other Senior Matriculation, indicate the institution(s) attended and include a transcript of your grades with your submission. The transcript does not have to be official at this stage, photocopies of Grade Reports will be sufficient:
(Minimum acceptable average is 'C')

CHECKLIST OF REQUIRED SUBMISSIONS

All requirements need to be submitted by the deadline date of APRIL 30TH.

Resumé

☐

Assignment 5

☐

Portfolio

☐

Assignment 2

☐

Portfolio

☐

Portfolio

☐

Assignment 3

☐

Portfolio

☐

Transcript(s)

☐

Assignment 4

☐

Portfolio

☐

I declare that this submission is all my original work.

(Signature of Applicant)

(Date)

(For office use only)

Candidate No:

Submission received:

SCHOOL DECISION:

Accept

☐

Refuse

☐

Hold

☐

APPLICANT DECISION:

Accept

☐

Decline

☐

FORMAT FOR ASSESSMENT

It may be of interest to you to know how the Admissions Committee will do its work.

The assignments and your portfolio materials will be hung on the wall of the Schoof's exhibition rooms in the arrangement shown opposite.

Each of the nine members of the Committee will review your work independently, seeking indications of aptitude and motivation for our two professional programmes, looking for clarity of thought and expression, reasoning ability, spatial understanding and compositional ability, and assigning it a grade accordingly.

These independent assessments of the Committee members will then be recorded and added together to arrive at a total score. In the event of a significant difference between individual grades, the work is reviewed and re-assessed by the entire Committee working together to ensure consistency and fairness.

The final scores, taken together with the records of academic achievement, form the basis for the ranking of candidates.

1 RESUME	PORTFOLIO
2 DEDUCTIVE READING AND DRAWING ASSIGNMENT	PORTFOLIO
3 WRITING ASSIGNMENT	PORTFOLIO
4 SPATIAL COGNITION ASSIGNMENT	PORTFOLIO
5 DIRECTED COMPOSITION	PORTFOLIO

REQUIREMENTS

All resumé, assignment and portfolio pages are to be 8.5" x 11", horizontal format. Each page, except for the resumé, must be signed and dated on the back. Please print your name in clear block letters and sign your name below. (Your signature indicates that the submission is your own original work.) In the event that a graphic assignment is executed in soft pencil or crayon, it should be fixed to prevent smudging in handling.

The Resumé and Assignment 2 must be typed.

Portfolio inclusions (Items 6, 7, 8, 9 and 10) should be of recent work, preferably completed in the last two years. They may be presented as originals or reproductions of drawings and other two-dimensional work, original photography, photographs of three-dimensional pieces, etc. Colour and black & white prints and colour laser copies are acceptable.

Candidates are advised that all the portfolio items will become part of our permanent record and are not returnable at any time. If you need copies of your portfolio materials, duplicates should be made prior to submitting your portfolio.

ADMISSION WITH ADVANCED STANDING

Advanced standing applicants are required to have studied for more than one year at a recognized school of architecture, landscape architecture, or design; to complete all the writing and drawing assignments set out in this document; and, in addition, to provide a portfolio of design work from their present or past school course work or professional office, or other original design work as may be appropriate.

Advance standing candidates are strongly encouraged to visit the School. Consultations with the Program chairmen can be arranged by contacting Mrs. Pat Telford (416) 978-6192.

REQUIRED SUBMISSIONS

1 RESUME

Using 8.5" x11" paper, horizontal format, provide a typed personal resumé, stating your full name and address, biographical and educational information, together with a summary of your extra-curricular activities and accomplishments, your hobbies or pastimes, travel, sports, and interests.

2 DEDUCTIVE READING AND DRAWING ASSIGNMENT

The passage that follows is an architect's description of a village in pre-industrial Eastern Europe. It provides a broad-brush word picture of the summer climate, the pattern of settlement, the spatial organization and, implicitly, the construction of the typical village courtyard dwelling, its civic and domestic planting schemes, and hints as to the family life it sustains.

On an 8.5" x 11" sheet of white paper - horizontal format - make a number of sketches to convey to us, as clearly and accurately as you can, your conceptionalization of this house and its setting, illustrating the essence of the place being described. The sketches may be diagrammatic or pictorial or both. Make as many sketches as you find necessary in any medium or media that seems appropriate.

"They're admirable, these villages of the great plain, and you cannot imagine their grand style.

The streets belong to the plains, absolutely straight, very broad, uniform, intersected at right angles and endlessly dotted with the little balls of their dwarf acacias. The sun smashes into them. They're deserted. Life in them is furtive, transitory, as is that upon the vast plain to which they are the channels, the vital centres. They are, as it were, enormous scenery flats, since high walls enclose them on both sides. You have to understand their impressive unity and their ample architectural character: the sole material, a bold yellow rendering; a single style; a uniform skyline and the singular acacias of such a peculiar green.

The houses line up, non-too wide but very deep, and each with its low gable-end, but with no projecting roof to pose as a pediment upon the never-ending wall, which is overtopped, instead, with trees and the leafy stems of vines and climbing roses which fill the courtyards entrenched behind it with enchantment.

These courtyards - conceive of them as a room: the summer room. Since all the houses are built equi-distant, up against the enclosing wall, and since the window openings are confined to a single arcaded facade, each house has its courtyard, and their intimacy is complete. Beauty, joy and serenity are concentrated here: the latticework vine-arbour constitutes a green shade, the white arcade comfort, and the three high, white-washed walls, repainted every spring, a screen as decorative as the backgrounds on Persian ceramics, while, for the wagons, a wide semi-circular arched gateway with a lacquered door of red or green, and a very small one for people, this latter entering directly into the end of the arcade, open onto the vast outdoors.

Calmly settled between their overflowing vines and climbing roses, and facing each other across the street dotted from end to end with the green balls of the little acacias, are just the bare yellow triangles of the low gable ends."

3 WRITING ASSIGNMENT

The following passage by a contemporary architectural historian and critic offers "three possible answers" to the question of the purpose of architecture - or, equally, the purpose of landscape architecture - as a human product.

"The architect [landscape architect] does not work in a vacuum. His products are solutions to problems coming from the environment, and the solutions also have a retroactive effect. We therefore have to enquire what the environment asks from the architect, or rather, what it ought to ask from him, and also how a 'good' solution is defined. The architect works in 'situations' which are composed in particular ways and which explicitly or implicitly pose particular questions. The situations are for instance made up of economical, political and social conditions, of cultural traditions, of physical conditions such as climate and topography, and not least of human beings who 'see' the environment in very different ways. The situations are not static, but always changing: the political organization of the society changes, the economical conjunctures oscillate, and the climate hardly offers constant conditions. These fluctuations are always more submitted to human predictions and control, and the architect has to participate in the planning which should secure stability through the changes.

In general we may say that architecture [landscape architecture] is a human *product* which should order and improve our relations with the environment. It is therefore necessary to investigate how human products are brought forth. Hence we should ask: *What purpose has architecture as a human product?* The functional-practical, the milieu-creating and the symbolizing aspects constitute three possible answers to the question"

What do you understand by the "three possible answers" put forward by the author? Do they adequately define the role of architecture or landscape architecture in relation to the environment?

Comment on the text so that we can understand your answer to these questions. You may wish to cite a public building or place (ie library, town hall, public park, theatre, etc) that you know and use it to support your views.

Type the two paragraphs, double spaced, on one 8.5" x 11" sheet of white paper, horizontal format.

4 SPATIAL COGNITION ASSIGNMENT

The three objects shown opposite are the components of a strong joint in a wood beam which requires no nails or other fixing.

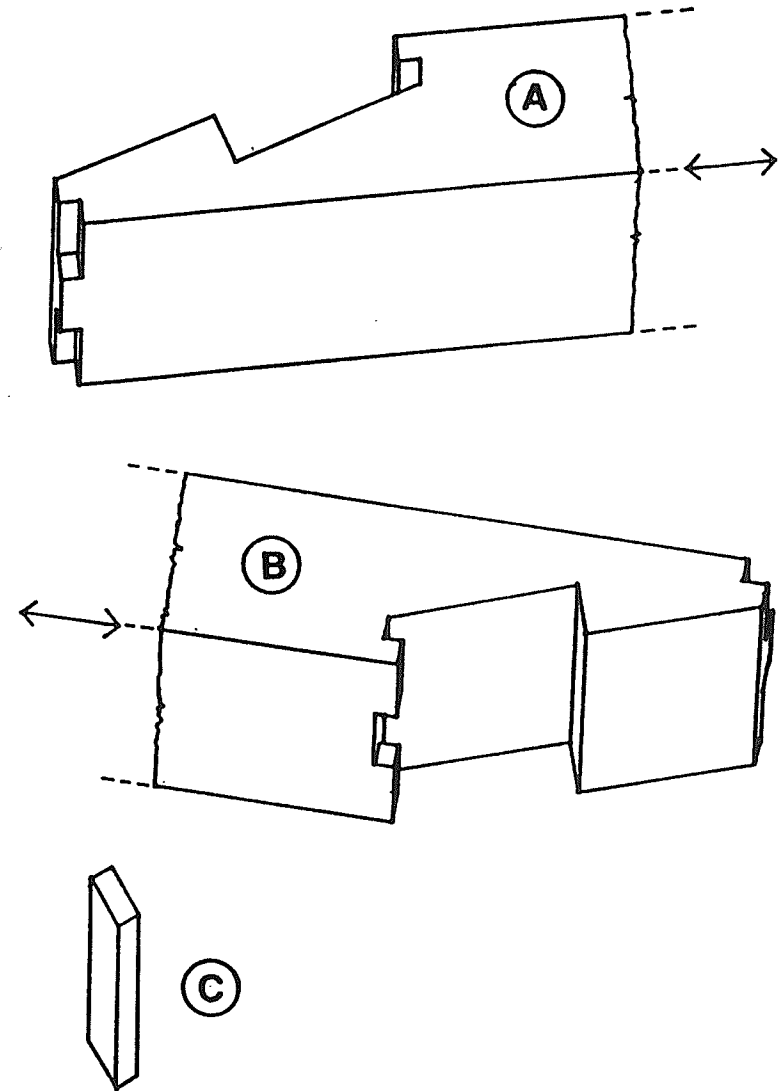
Components A and B represent the two pieces of a beam which are to be joined. The profiles of A and B are identical but opposite, so as to interlock.

For the convenience of the drawing, only the interlocking ends are shown. The broken lines indicate where the rest of each piece would be

A joins B so as to resist tension (pulling) and compression (squeezing) shown in the direction of the arrows.

Component C has a very slight taper in its length.

You are asked to work out how the three pieces would be assembled to make an effective joint and, on a sheet of 8.5" x 11" paper, horizontal format, draw a series of diagrams to indicate, as simply as possible, the whole process of assembly. Do not use written instructions. Your set of diagrams should be able to act as a complete instruction for anyone trying to assemble the joint.



5 DIRECTED COMPOSITION

The enclosed coloured print, to guide you as a basis for this exercise, is a reproduction of a small still-life painting made by an architect about forty years ago. The subject matter is quite clear and deliberately "ordinary": there are half-filled bottles of wine and aperitif or liqueur, carafes, water flasks and a variety of glasses, a boiled egg (which is also the dimple in the bottom of the carafe just behind it), a clay pipe and dominoes, all sitting on a "lipped up" table top which is really the whole canvas, half in sunlight (or perhaps covered with a table cloth), half in shadow. Alternatively, perhaps the table is defined only by the two bottom horizontal bands of the composition and the left-hand cream rectangle denotes a near wall while the right-hand grey rectangle a more distant wall and, to add to the ambiguity and richness of readings, perhaps the pale blue tumbler containing red wine may also be seen as a window to some far horizon of the evening sea, etc, etc.

Clearly this architect was concerned with painting as a closely disciplined form of plastic exploration. Note how his objects "occupy" the entire surface of the canvas and how insistent he is on the primacy of a strong, simple organizing geometry. In this example, the division of the canvas into two equal parts, both horizontally and vertically, is only the beginning of a very rich set of spatial and formal relationships established with the regulating aid of carefully considered proportions.

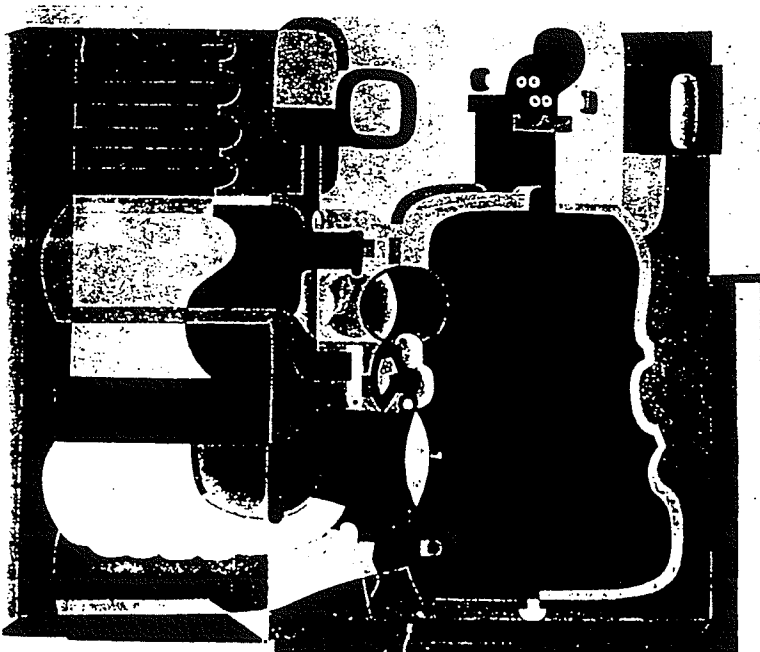
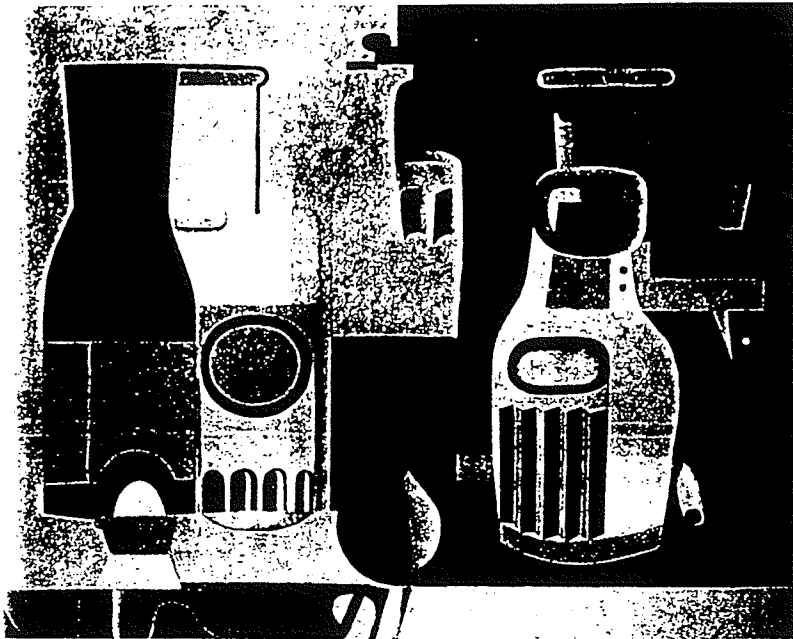
Note, also, how directly the form of each object in the painting is conveyed by the delineation of its characteristic outline or contour, by the simple act of showing a top view at the same time as a frontal view, and how the forms of the objects reiterate and re-echo each other by the repetition and the engagement of the contour of one with that of the other. Finally, take note of how depth and transparency are obtained by means of plane tipping and the layering of objects. These events, plus the use of colour which is not always representational, combine to make this little painting into a kind of music for the eye.

We invite you to adopt precisely the same spatial strategy and formal discipline as this architect-painter, as you understand it, and to compose a still-life of your own, using the following materials.

a white poster board 8.5" x 11",
paper glue or paste,
coloured construction paper from an 8.5" x 11" pad,
ink or crayon enhancement.

Using the white poster board as a base with the long side horizontal, cut, tear and paste the coloured construction paper to it, overlapping as may be necessary, to make a collage composition filling the area available. The subject matter of your composition is to include, but is not limited to, the following objects.

a table, containing:
a coffee pot (ceramic, metal or glass)
a plate, cup and saucer
a table knife
a water jug (ceramic or glass)
a water glass
pepper and salt mills (wood, metal or clear plastic)
a bottle or carafe of wine
a wine glass
a napkin in a napkin ring
a book, open or closed



Interior Design Data

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	GPA	STUDIO1	STUDIO2	STUDIO3	STUDIO4	THEORY1	THEORY2	THEORY3	THEORY4
GPA	1.00000 0.0 253	-0.02655 0.6849 236	-0.12233 0.1164 166	-0.03599 0.6609 151	-0.10107 0.2507 131	0.15121 0.0193 239	0.02790 0.7139 175	-0.01382 0.8658 152	0.18282 0.0345 134
STUDIO1	-0.02655 0.6849 236	1.00000 0.0 288	0.63769 0.0001 204	0.53617 0.0001 184	0.50791 0.0001 163	0.54839 0.0001 284	0.21590 0.0014 215	0.28573 0.0001 186	0.13895 0.0733 167
STUDIO2	-0.12233 0.1164 166	0.63769 0.0001 204	1.00000 0.0 210	0.57168 0.0001 190	0.42704 0.0001 169	0.31355 0.0001 203	0.25302 0.0002 210	0.27745 0.0001 191	0.13106 0.0857 173
STUDIO3	-0.03599 0.6609 151	0.53617 0.0001 184	0.57168 0.0001 190	1.00000 0.0 190	0.60008 0.0001 169	0.33329 0.0001 183	0.24055 0.0008 190	0.30614 0.0001 190	0.29837 0.0001 173
STUDIO4	-0.10107 0.2507 131	0.50791 0.0001 163	0.42704 0.0001 169	0.60008 0.0001 169	1.00000 0.0 169	0.30154 0.0001 162	0.21206 0.0056 169	0.16770 0.0293 169	0.17046 0.0272 168
THEORY1	0.15121 0.0193 239	0.54839 0.0001 284	0.31355 0.0001 203	0.33329 0.0001 183	0.30154 0.0001 162	1.00000 0.0 291	0.29716 0.0001 214	0.04891 0.5086 185	0.24801 0.0013 166
THEORY2	0.02790 0.7139 175	0.21590 0.0014 215	0.25302 0.0002 210	0.24055 0.0008 190	0.21206 0.0056 169	0.29716 0.0001 214	1.00000 0.0 221	0.11763 0.1042 192	0.41900 0.0001 173
THEORY3	-0.01382 0.8658 152	0.28573 0.0001 186	0.27745 0.0001 191	0.30614 0.0001 190	0.16770 0.0293 169	0.04891 0.5086 185	0.11763 0.1042 192	1.00000 0.0 192	0.12898 0.0908 173
THEORY4	0.18282 0.0345 134	0.13895 0.0733 167	0.13106 0.0857 173	0.29837 0.0001 173	0.17046 0.0272 168	0.24801 0.0013 166	0.41900 0.0001 173	0.12898 0.0908 173	1.00000 0.0 173

Environmental Studies Data

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	GPA	STUDIO1A	STUDIO1B	STUDIO2A	STUDIO2B	STUDIO3A
GPA	1.00000 0.0 146	-0.04616 0.5801 146	0.04101 0.6304 140	-0.02118 0.8139 126	0.12585 0.1841 113	-0.06814 0.5028 99
STUDIO1A	-0.04616 0.5801 146	1.00000 0.0 165	0.80228 0.0001 159	0.34219 0.0001 144	0.48226 0.0001 131	0.27980 0.0022 117
STUDIO1B	0.04101 0.6304 140	0.80228 0.0001 159	1.00000 0.0 159	0.50010 0.0001 144	0.46268 0.0001 131	0.28583 0.0018 117
STUDIO2A	-0.02118 0.8139 126	0.34219 0.0001 144	0.50010 0.0001 144	1.00000 0.0 148	0.40918 0.0001 135	0.28895 0.0013 121
STUDIO2B	0.12585 0.1841 113	0.48226 0.0001 131	0.46268 0.0001 131	0.40918 0.0001 135	1.00000 0.0 135	0.38101 0.0001 121
STUDIO3A	-0.06814 0.5028 99	0.27980 0.0022 117	0.28583 0.0018 117	0.28895 0.0013 121	0.38101 0.0001 121	1.00000 0.0 121
STUDIO3B	0.06641 0.5248 94	0.31362 0.0008 112	0.34903 0.0002 112	0.37315 0.0001 116	0.33989 0.0002 116	0.50286 0.0001 116
INTRO	0.05372 0.5225 144	0.15021 0.0556 163	0.24831 0.0016 159	0.02400 0.7752 144	0.20030 0.0218 131	0.20992 0.0231 117
THEORY1	0.02271 0.8031 123	0.33106 0.0001 142	0.41500 0.0001 142	0.35355 0.0001 144	0.40476 0.0001 135	0.33167 0.0002 121
THEORY2	0.09906 0.3171 104	0.24461 0.0066 122	0.28431 0.0015 122	0.20464 0.0215 126	0.22686 0.0110 125	0.22495 0.0135 120
THEORY3	-0.00981 0.9217 103	0.31770 0.0004 121	0.31022 0.0005 121	0.34343 0.0001 125	0.25331 0.0045 124	0.34499 0.0001 119

Environmental Studies Data

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	STUDIO3B	INTRO	THEORY1	THEORY2	THEORY3
GPA	0.06641 0.5248 94	0.05372 0.5225 144	0.02271 0.8031 123	0.09906 0.3171 104	-0.00981 0.9217 103
STUDIO1A	0.31362 0.0008 112	0.15021 0.0556 163	0.33106 0.0001 142	0.24461 0.0066 122	0.31770 0.0004 121
STUDIO1B	0.34903 0.0002 112	0.24831 0.0016 159	0.41500 0.0001 142	0.28431 0.0015 122	0.31022 0.0005 121
STUDIO2A	0.37315 0.0001 116	0.02400 0.7752 144	0.35355 0.0001 144	0.20464 0.0215 126	0.34343 0.0001 125
STUDIO2B	0.33989 0.0002 116	0.20030 0.0218 131	0.40476 0.0001 135	0.22686 0.0110 125	0.25331 0.0045 124
STUDIO3A	0.50286 0.0001 116	0.20992 0.0231 117	0.33167 0.0002 121	0.22495 0.0135 120	0.34499 0.0001 119
STUDIO3B	1.00000 0.0 116	-0.03375 0.7239 112	0.16599 0.0750 116	0.27174 0.0032 116	0.32334 0.0004 116
INTRO	-0.03375 0.7239 112	1.00000 0.0 163	0.30277 0.0002 142	0.29203 0.0011 122	0.15083 0.0987 121
THEORY1	0.16599 0.0750 116	0.30277 0.0002 142	1.00000 0.0 146	0.22971 0.0097 126	0.29518 0.0008 125
THEORY2	0.27174 0.0032 116	0.29203 0.0011 122	0.22971 0.0097 126	1.00000 0.0 126	0.27689 0.0018 125
THEORY3	0.32334 0.0004 116	0.15083 0.0987 121	0.29518 0.0008 125	0.27689 0.0018 125	1.00000 0.0 125

Toronto Data

Pearson Correlation Coefficients / Prob > |R| under H₀: Rho=0 / Number of Observations

Correlation: Analysts

Correlation Analysis

Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of

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