STAN

A MEMOIR

DEDICATION

To David ….. without whose needle under the thumbnail I would not have bled these words ……..

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PREFACE

When the ubiquitous phone rang, as it was forever doing, Stan's hand would cobra-strike the receiver and, in response to the unheard 'how are you?', he would explosively proclaim, 'I'm alive !!' ……. Not anymore.

Stanley Tennenbaum, American mathematician, died on 04 May 2005, age 78 ……. sitting in a chair, a phone in his hand.

On 07 April 2006, a 'Conference in Memory of Stanley Tennenbaum' was held at the Graduate Center of the City University of New York (CUNY). As befits the man, it was casual, nothing pompous, little formality. Filling the typical, unremarkable, non-descript conference room were friends, colleagues, graduate students, people who had known him intimately for years, people who had scant acquaintance, people who had met him only indirectly through his work, those

who knew him but by name. There were intimates from the student days at the University of Chicago, Bill Howard, Ray Smullyan, Anil Nerode, Mel Nathanson when he was a graduate student at the University of Rochester, John Conway through a chance meeting at one of his talks on surreal numbers, Angus MacIntyre, Stan known to him only through Stan's theorem 'No countable non-standard model of Peano arithmetic can be recursive' .

As I watched the video recording plaudits, tributes, critiques, analyses, reminiscences, commentaries I wondered that should I be meeting Stan for the first time through this day, would I have any idea of the man at all? Would this pastiche of disconnected yet colorful anecdotes mixed into a stew of wild stories implying a kook or a nut flavored with a soupcon of arid mathematical erudition topped off with a skein of superficial notions of various of his ideas and attitudes provide even an inchoate version? Indeed there appeared an inverse relation as to penetrating understanding of those who knew him best to those who knew him only indirectly through his work ….. the

most insightful, sensitive elucidation of his mathematical essence from a younger mathematician who did not know him, only his work, Angus MacIntyre, the great tragedy being that they both rubbed shoulders at the Institute For Advanced Study, but Mr MacIntyre, one of the anointed that Stan would have been fascinated and utterly delighted to know, too shy to speak to him.

That the conference day did take place speaks highly of those attending but the proceedings did not sum the man, bearing little witness to his passion for rational life, his deep curiosity, his robust knowledge, his endlessly fascinating persona, his extraordinary range of interests, his penetrating and creative views, his enormous intellectual stature, his deeply emotional love for life, his fully integrated and largely self constructed philosophical housing, and his placement at least in my mind in the pantheon of American originals.

I met Stan as a freshman of 17 at the University of Rochester in the fall of 1965, he recently appointed fully tenured professor of mathematics, when I happened in on his general calculus course that term. Coming to know him mainly through hanging out at his office over that year, he invited me to live with him and his family my sophomore year, early summer 1966 to early summer 1967, after which I continued to see him off and on until I left the U of R in spring 1969. I saw him once again at the Institute For Advanced Study in the spring of 1971, not again after that.

What follows are my recollections and memories of the man of greatest impact and influence on my life that, though his body spent, his spirit will persist. These are the memories of a half a century ago, little attempt has been made to rely on anything but memory. As Einstein noted the mind is not a completely reliable tool for recording with fidelity the past. However, should this recounting of my most formative period give you the idea of the man, as Stan would have expressed it, then it has accomplished my aim.

SPRING 1965 – FALL 1965

In the spring of 1965, having just read 'Of Whales and Men', I determined that, on completion, in a couple of months, of high school, I would leave home, age 17, to become a whaler in the Southern Ocean ….. whether I would complete high school, though not a particularly relevant point, was an open question as by that time I had been thrown out of half my senior classes, principally for, in those days when this was as yet unacceptable behavior, unquietly questioning the teachers' rights to involve themselves in the determination in any way of my life, such determination I was adamant should be in my hands alone.

This somewhat atypical attitude culminated a short time later with my announcement to my parents that they could no longer have any dominion over me, could no longer tell me at all what to do, the corollary being that they would of course be absolved of any responsibility for my well-being and, by further

implication, I would necessarily need to leave home. Adding salt to the wound I announced further that, though accepted to the U of Chicago, U of Wisconsin, and U of Rochester, I had no intention of attending university as there was nothing that I could not figure out myself and that I would be leaving for San Francisco, the nearest Norwegian Consulate being there, to become a whaler in the Southern Ocean ….. in the morning.

This I duly did, only to be brought up short by the courtly gentleman running the Norwegian Consulate, who after gravely listening to my overall plan, gently but firmly, no admonishment in his tone, intoned that I was about 100 years too late, that teen-age boys, no matter how wild the hair in their derriere, could not run off to sea …… anymore.

Although infrequent by this time my attention to the advice of others, I did mark his message and as an alternative, though with no particular goal, set up shop in San Francisco, food and shelter courtesy of Western

Union where I acquitted myself well as a telegram messenger boy, albeit the only one with an English racer sporting but one brake, the front one, with which to handle the hills of San Francisco, this the ultimate determinant as to my fall attendance at the U of Rochester when upon careening down a hill I had to choose between a pedestrian or a taxi, the screeching smash into the back of the taxi breaking the bike's frame in two …… with no bike, and after so many months San Francisco's allure receding, I succumbed to the blandishments of undergraduate life, a decision I do regret …….. except for the fact that, as a result of that decision, I met ……. Stan Tennenbaum.

As I had had Ms Childre's calculus class in high school, I was placed in Tony Hager's advanced calculus, about 15 of us, Mon-Wed-Fri, 10:00am …… Tony was a nice guy, recent PhD who had just arrived as part of Leonard Gillman's (very successful) efforts to build the mathematics department into a world class repository of mathematical talent, but a pretty meat and potatoes lecturer, inspiration not his strong point …… There was another calculus course, the introductory one,

200-300 students, in the roman amphitheatre Hoyt Hall meeting the same time Mon-Wed-Fri, 10:00am …. As I was living in a freshmen dorm, many of the students on my corridor were in this other course. It wasn't long before the rumblings reached me, rage, fear, astonishment, confusion, anxiety, hysteria regarding this crazy professor, incomprehensible, out of control, bewildering, unfathomable ….. curiosity piqued, I skipped my class (never to appear there again) and sat myself in this one, center, close to the front ….. shortly he entered with his characteristic lithe, relaxed but purposeful walk, Stan Tennenbaum, the man who was to have (outside of my father) the greatest influence on my life, dwarfing all others, the most scintillating, charismatic, exciting, mesmerizing man I've ever personally known.

From the moment of his first words I was transfixed ….. for here, far from the madman fulminating in the overwrought psyches of the attending students, was the clearest, most rational, most penetrating intelligence I had encountered, one who believed there was truth, there was reality, one whose unremitting

goal was to seek such, any other goal mundane, nearly perverse by comparison. I immediately grasped the intellectual firmament on which he resided, the bedrock of assumptions that informed and underlay his speech and actions, the metaphysical vantage point on which he balanced. With no perceptible persuasion, I instantly became an acolyte, a true believer, a made man, trenchantly faithful, of diamond loyalty ….. he was the flame, I was a moth.

As I listened it became patently obvious why the students were panicked, little fawns in the headlights, stricken with anxiety. The majority of University of Rochester undergraduate fodder were upper middle class kids, 'good' kids, from the northeast, particularly the New York, New Jersey area. They were hard working, reasonably intelligent, coddled, bent on fulfilling mummy and daddy's expectations that they get into med school, law school, or graduate school. They had lock-stepped through elementary school, junior high, and high school, and were now about to do the same, with no particular enthusiasm, through university ….. again, they would be other-organized,

told what to do, and with scant resistance would docilely fall in line. They had never queried the educational constructs that ordered their lives, indeed they had little queried societal constructs in general. Almost uniformly they were without the faintest glimmer that they held, or should do, their lives in their own hands which is the precursor to such questioning, no recognition that they were, or could be, 'the master of my fate… the captain of my soul'.

Had they taken any other calculus class, no calamity would have ensued. There would be classes, lectures, notes, homework, tests, exams, all would be clear, stale, dull …… but ordered …. and recognizable. Unforeseen misfortune, they had stumbled into unknown territory, fraught with peril, they had entered Stan's domain, the domain of a 'true' university, a housing, an enlarged carapace that attended and enveloped Stan wherever he went. When you entered Stan's class, you entered the totality of his Cardinal Newman's 'Idea of a University' scholastic world, as pristine and devoted to truth as the moment it found near realization in Hutchin's

University of Chicago. Make no mistake, upon entering Stan's class, you have entered his 'city on a hill', no sop, caveat, obeisance, compromise with any other.

This notion of a university, of long historical development, was laden with assumptions quite natural to Stan, the air he breathed, but unknown to the unsuspecting students.

First, foremost, is the assumption that there is truth, it is knowable, the tool for its comprehension and discovery is the mind, the modus operandi for its amplification and elucidation is rationality. A university is an entity, an institution, independent and unto itself with no obligations or commitments to any other outside itself that is composed of a collection of professors and students, the professors only distinguishable from the students by virtue of the fact that they know some things that the students don't, their articulation one of transference of that knowledge from professor to student, all with a belief in, a commitment to, a pursuit of the truth regardless

of subject matter or field of endeavor, all organization and practical considerations subject to the maximization and realization thereof.

Secondly, was the assumption that the students, as members of the university, were grown ups, independent of nature and thought, serious as to their 'self actualization', cognizant, and relishing, that they were in control of, managed, organized, directed their own lives, were in attendance because they had chosen to be so and wished to truly learn the subject, principally for its own sake but secondarily as it might relate to larger goals. 'In loco parentis', antithetical to this assumption, had no place here, was given short shrift, was left languishing outside the walls.

Thirdly, the professors, were completely independent entities beholden to no one with respect to their activities and pursuits and within the confines of a given class completely unshackled as to its content, organization, conduct, and pedagogical device.

Stan, the living embodiment of a member, professor of a 'true university' conducted his class accordingly. In its particulars, he frightened the bejesus out of the average U of R student ……. for me, for the first (and ultimately, the only) time, l was elated, dancing on air, I had found someone who understood, revered, and lived intellectual freedom, passionate pursuit of truth, a will and joy in choosing and forging his path, one for whom 'university' had real meaning and who 'walked the walk' to bring it to me, crystalline heaven established on stolid earth.

The air was always informal, but serious, intense. Dressed in elegant casual, slacks, open collar shirt, jacket, Brooks Brothers the favored brand since his University of Chicago days, Stan would start a lecture in a low-key fashion, introducing the topic for the day, unfailingly clear, his voice relaxed, measured, in complete command of the material, utterly confident, no hesitations, lapses, confusions, circumventions …. whether talking to 2 or 200 (as in the case of the calculus class), it was as if he were talking to you one on one, intimate, he completely aware of and engaging

(if not captivating) you, involving you in a conversation, measuring, gauging your understanding and leading, the Socratic carrot dangled. Regardless the material, in this case beginning calculus, Stan was more interested (in a freshman class) in progressing your understanding of yourself with respect to learning, to knowing, to believing in your own mind, to becoming independent and confident in your own thought ….. far from the average professor, distancing himself from the student hoi polloi, delivering a one-sided monologue of material more easily absorbed through the text book he mimicked, Stan at the outset engaged you, probing, questioning, challenging ..... truly interested in your development, he was not your friend, he was your 'profess'or …. For the student who had screwed up the courage to, with 200 sets of eyes upon him, respond to a question, there awaited not approval, appreciation but rather…. 'really ??' ….. 'are you sure ??' ..... after a couple of iterations of such, the hapless student, unless of very hardy self-belief, would fade into questioning himself, but at least a lesson of a different sort was learned. Another variant of this was 'how much are you willing to bet ?', a different measure of how sure you were about whatever it was

you were saying …… ever instructive this question prevailed over and over in every class I ever had with Stan, one of the most interesting episodes being when Stan asked Bonnie Gold in a number theory course whether she would bet her life on something she had just stated, upon which Bonnie in a fluster exploded with 'I wouldn't bet my life on anything !!'.

Though there was always a nominal topic to each of Stan's lectures, say for example summation of certain infinite series, the excitement was in knowing in advance that you had no idea in which direction the 'conversation' would veer. Always speaking extemporaneously, never notes (please !!) but with consummate depth, erudition, and certain philosophical orientation, a lecture from Stan was always an adventure, hugely interesting, entertaining, with definite instructive point but unpredictable a priori ….. this of course is part of what was so frightening to that student (so many of them) that wanted to know where he was going and what was expected of him in getting there.

What you might (reasonably) ask does this have to do with inculcating calculus into the resistant heads of the undergraduates? And for that we look at the course as a whole, the constellation of elements working in concert ….. first there of course was a text, a beginners calculus by Serge Lang I think, by all accounts a good exposition though my subsequent impression was Stan was somewhat dismissive, somewhat distrustful of Lang (or at least Lang was of him), who was at the University of Chicago at the same time, perhaps because of his association with the Bourbaki, red rag to a bull anathema to Stan. Stan's view and orientation, and one he was at great pains to discuss at length with the students in and out of class, was that if you truly wanted to learn the calculus (or anything else) you found the very best text you could find (for example, Courant's 'Differential and Integral Calculus'), you (slowly) worked through the theorems by (always) first attempting to prove them yourself, you (at the very least) ensured you (thoroughly) understood the theorems and their proofs, and coup de grace, you did all of the problems. Hey, presto !! Again this assumed the student sported the attributes

of a member of a ‘true’ university, Stan’s real point to his lectures, to do what he could in developing such.

Next there were graduate assistants around, always available to check the problems (not assigned, Stan was not going to hold their hands to that extent) any student (not trusting his native wit) cared to do, the graduate assistants also deployed to grade exams….

Further, forget office hours, Stan’s door was always open, he ever ready to talk to a student, untold hours spent with his undergraduates in contrast to the can’t be bothered professors. His office was always full, he fully engaged with each student, again probing for, exposing the real problem the student was having, nearly always not of mathematical nature, but rather psychological.

With all of these elements, Stan’s how to lectures and the supporting structure, the student with a modicum of initiative had the wherewithal to get a good

grounding in the calculus …. yet still the hysteria persisted.

In part this was caused by the anxiety as to how they would be measured, their grades, how would they get that A to get into medical school, an issue fundamentally irrelevant to Stan and one for which he little patience. Historically, ancient universities, collections of people seriously interested in knowledge, simply offered a set of exams which, when passed, gave a measure of acknowledgment, the baccalaureate. Over time this simplicity degraded into the complexity of more and more exams for smaller and smaller increments, ultimately finding nearly obscene expression in American universities, multiple tests in a given course, a scale A-F, all mere impediments to one seriously intent on real learning. Stan's solution in this morass, not at all to placate the students but rather the inevitable implication of his attempt to function as if in a true university, was to give two very straightforward exams, mid-term and final, and a grade for the course of either A or B, no failures, course attendance irrelevant ….. additionally a student would get an A for showing any initiative

whatever in any form, say for example a notebook of problem solving, this carried out in the extreme when one of the basketball players who could in truth not tell a derivative from an integral got an A for a really good showing on the basketball court.

This 'gift' to the basketball player was in part due to Stan's reverence for sports and sports figures, not as unrelated to academic pursuit as it might first appear, the two antithetical in the minds of most people ….. for Stan achievement on the playing field was indistinguishable to achievement on the mental playing field. Both required courage, stamina, practice, really hard work, staying power, commitment, tenacity, and development, building up from level to level. A finely executed football play held the same beauty and joy as the discovery of a simple proof, particularly if it featured a smaller player succeeding through wit and guile against a larger opposition. Stan's lectures were littered with analogies to sport, the mind a muscle requiring practice and exercise like any other. He himself had played football until damaging his back, not surprising

in one who occasionally played without a helmet in order as he said 'to impress a girl'….. diving too, indeed it may be in that practice that he did his back in what with his creative efforts to do complicated tandem dives with a friend …… practice and working really hard were never to be underestimated, developing critical discipline as well as building capability, both obtaining when he was forced in high school to do really hard plane geometry problems, which he believed essential to his ultimate capacity to doggedly, determinedly tackle very difficult advanced mathematics. That persistence, resolve, and determination are essential to achievement is particularly evident given that but 3% of highly talented people reach their potential due to the general lack of such. Stan's regard for sports figures carried on throughout his life, one story the day he recognized a great college football player on the street, spent the afternoon with him watching his old films, the athlete undone that he was remembered.

Stan's interest and thought regarding the relationship of mental and physical activities was part of his deep

interest in achieving successful results in mathematics, solving problems ….. in his lectures he spent much time with this, often posing a problem, and then with pointed questions, lamping the way, the wide awake student fixedly engaged, through to solution ….. Acutely aware of mathematicians who had thought on this art, he had high regard for and pointed us to George Polya's two volume set, 'Mathematics and Plausible Reasoning', Hilbert and Cohn-Vossen's 'Geometry and the Imagination', Courant and Robbins' 'What is Mathematics?'.

In this first calculus course, the majority of the students, purblind and mystified, resigned themselves to this trial, one but to be weathered, an early cross to bear, but ultimately to be put behind them in their beeline to law school (or whatever) ……. farmer Stan had opened the barnyard gates and beckoned to the verdant open fields beyond but, startled and leery, they remained transfixed, encephalitic lethargica to the end. There were a few however that listened closely, that opened their minds, that began tentative steps into those fields beyond the gates. Stan always

said he could identify those for whom this would happen at the start of any semester, just by looking into their eyes. For myself, I forthwith skipped Tony's class altogether and could be found Mon-Wed-Fri, 10:00AM, in Hoyt Hall, 1st row, centre.

FALL 1965 – SPRING 1966

In his efforts to wake the students up to their own context, Stan dwelt fulsomely on their relationship to the university, particularly in regards to money. In the middle ages the transaction was simple, direct, a group of scholars (ie students) pitched in and paid one of their number (ie professor) to give them a series of lectures on a topic of their choosing, the professor known to husband great knowledge of that topic. At Rochester (as elsewhere) the transaction was more complex but recognizable, the students (really their parents) paid the university, the university paid the professors, the professors taught what the university (OK, the departments) dictated. Stan's point was that though the system was more convoluted, the students were paying and therefore had a right to control what they were being taught and who was doing it …… he, ever the disturbing influence, urged the students to storm the administration (OK that's a bit strong), to look into how decisions were made to determine the student's education, a starting point through analysis of the university's budget, where the money came

from, where it went, who controlled it. Zoot alors !!! …. A handful of students, many on my corridor in the dorm, did exactly this.

These same students, on a roll and wakening to their great good fortune in finding themselves in Stan's class, invited him for an evening to Gilbert Hall, maybe 10 to 15 students on chairs and pillows in the lounge to meet him. As soon as he arrived, he launched, no ceremony, into dialogue with the students as to what they had found, this pathing through various other educational topics, to segue into a tour de force mini-seminar on how to really read a academic book, material to be mastered, say a physics, chemistry, psychology text, you know, a textbook.

OK, on the one hand you have this (hopefully really good) textbook containing all this stuff which you want to transfer (and master) into your own brain ….. how do you do it?….. After calling for a textbook (chemistry as it turned out), handed over with some trepidation by one of the students, the literally hands

on demonstration began. Stan's first point was that the physical book was a vehicle, a tool, it was not a shrine, a religious icon, and it was to be used (read abused) in whatever way necessary to achieve the desired result. It was to be written on, pages were to be bent, ripped out, devoured, so much the better if it ended its days ragged, torn, destroyed if indeed the result. Shocking of course to these kids raised to treat books as if objects in the arc of the covenant ….. Stan's next point was the gold contained in the book's preface. A close reading, word by word, sentence by sentence, would reveal the character of the author, his depth, insight, knowledge, creativity, 'phony' quotient, critical as to whether the work had any real value worth pursuing. Given that it passed this critical evaluation, what next? Start reading ….. at the back ! ..... or in the middle !..... attack the book, read a sentence, can you understand it ? yes? …. then go on …. No? then work backwards until you find the meanings of the words you don't get ….. iterate….. if the book is any good, you can do this, it will hang together, there will be no holes, lapses, chasms in the exposition …… as Stan with great admiration pointed out, something like Feynman's Lectures on Physics.

Talking, talking, talking, excitedly, passionately, the night ticked by, time never a consideration, never a boundary for Stan, he in full flow, tireless, a juggernaut of fascinating, to most students novel, ideation … and always to the point, always to and with his audience in mind, always what was of interest, germane, relevant to them, in this case their education …… it was of course expected that we, 18 year olds, could easily last out the full night, but Stan at 39 bested us, showing not the slightest trace of wear, slowing not a fraction in his fulminations, much more bright-eyed and chirpy than any of us as dawn broke, as we transferred to a breakfast diner, my eyes drooping before the coffee arrived.

(It was these same imaginative students who dressed up one of their number as a giant bat on Halloween, which then swooped without warning into one of Stan's lectures, this specter so unnerving Stan that he swiftly whirled and threw himself directly into the slate blackboard, a nearly calamitous end to one of America's premier mathematicians.)

Becoming increasingly disgruntled with what constituted academia even at a relatively sophisticated prestigious institution like the U of Rochester, I began with increasing frequency to visit Stan's office, just down from the math commons room, always open, always full, a steady stream of students trooping in and out, generally, as noted, not needing mathematical enlightenment, but most typically a psychological adjustment. At times we chatted but mostly I was a mute presence in the chair in the corner, listening, watching, grokking, learning, hanging on Stan's invariably interesting every word, my 'education' there worth whatever the price of admission, this my oasis of sanity in a maelstrom of mundanity, irrelevancy, and triviality.

Leonard Gillman arrived as chairman of the math department in 1960 bent on building a world class mathematical hothouse, immediately acquiring a coterie of extraordinarily accomplished mathematicians ….. in the mature ranks these included Harold and Dorothy Stone, Norman Alling (good

mathematician but terribly stiff and boring lunch guest), occasionally Norman Stein, Sandford (Sandy) Segal, Bill Eberlein, younger fish included Newcomb Greenleaf, John Dollard, and Tony Hager…. Stan too was netted, arriving Fall 1965, designated a fully tenured professor despite but a fig leaf Bachelor of Philosophy degree from the U of Chicago as academic adornment, chosen instead for his manifest contributions to the theory of mathematical logic including his work with Bob Solovay on the consistency of the `Souslin Hypothesis` and the support of close colleagues well aware of his substantial attainments …… Perhaps only coincidentally, the office of Robert Marshak, chair of the preeminent physics department, was just down the hall.

Your average mathematics professor is of prickly personality, introverted, socially maladapted, frequently enough exhibiting symptoms suggestive of Asperger's Syndrome (if not actually being a full blown example), consumed with his mathematics, few interests outside of such, and little interested in other

people …. at all. He sometimes cultivates a distracted, absent-minded, vague, bemused, head in the clouds air, one who has no time or inclination for the 'realities' of life, one who is inept, incompetent to deal with such, this often reflected in his body and attire. As such he has little interest in teaching, considers it an onerous yoke, inimical to, impediments of his researches, students but a nuisance, is devoid of pedagogy or interest in, has never thought much on how he learned or developed his own expertise in mathematics, has generally succeeded in the face of, in spite of any educational system that was afflicted upon him ….. OK, I am overstating the case, a bit of a caricature, but the real point is that in (virtually all) mathematics departments, there was (is) a huge distance between the professional practitioners, the grad students and the undergrads, the latter given no purchase from which to see, learn from, participate in, the lives and work of the former.

Stan was the precise opposite. Physically he was tall, medium build verging on lean, attractive, graceful of movement …. an ever present cigarette in one hand.

Hugely social out of deep interest in the human condition, a psychological adept, he exuded first and foremost an inviolate humanity. He was always 'present', his ineluctable attention and awareness an unwavering laser, fully cognizant of his current context, surroundings, and the inner totality of the one he was addressing. He dealt adroitly with reality at all levels, no subject too large or small for his incisive, rational, startlingly clear-headed, rigorously intelligent attention. For Stan, steeped in the ethos the Hutchins' university', the 'distance' between the practicing mathematicians and the neophytes was an abhorrence, an ulcerous status quo, a lost opportunity, a situation to be addressed and rectified.

In this he was the word made flesh ….. 'education' quite often his calling card, upon arrival he rapidly, proactively introduced himself to most of the mathematics faculty, early establishing a collegial, colleague to colleague relationship with many of them, a very warm association with Marshak who shared Stan's deep interests in education. Particularly sensitive to the younger members and the foreign

visitors, his spirited, garrulous vocalizations emanated from offices other than his own as often as from his. A raucous, high spirited, irreverent presence in the math commons room, more used to the hushed and muted tones of 'quietly flows the Genesee' conversation, he ebulliently injected himself into these conversations with 'What's going on here ?' or as often involving all those present in the room in some discussion, a very social atmosphere then prevailing. Ever sensitive to the accoutrements of civility, he replaced the styrofoam coffee cups with a full set of china cups and saucers (billed to the math dept), these in his mind I'm sure equivalent (in emotional meaning) to his beloved black slate blackboards, white chalk, which were all changed out everywhere for disgusting green faux boards, yellow chalk ….. Stan was much amused to observe the ensuing turmoil regarding who, when, how the cups and saucers were to be maintained and cleaned, an intractable conundrum to the world class concentration of brain power in evidence ….. As further indication of his adamancy to maintain the proper relation between professor and university administration, Stan parked wherever he pleased on the campus, generally right next to the math building,

ignoring the accumulation of parking tickets until their accumulation sufficiently mountainous to send them en masse to the bursar's office.

Stan was as attuned to the undergraduates as to the colleagues, fervently believing in the 'community of scholars' U of Chicago model as the ideal to furthering the acknowledged goals of a 'true' university. Besides his attention to his own classes, his own students therein, he quite naturally looked out for young talent and promise, well aware that in the normal instance these could be lost, overlooked, undeveloped, the measure of which indicating how far the U of Rochester, as with most other universities, departed from the vision, operation of a 'true' university. In my class of '69, Dave Scheim, certainly the best mathematics student in the class, was to large extent known to the faculty. Gary Russell, on the other hand, one of the finest mathematical minds in the nation, was nearly invisible. Gary had scored 5th in the nation in high school mathematics competitions and twice 30th in the collegiate Putnam competition, no mean feat, the 2nd time, coming in absolutely cold with no

prep or support from the university, solving the first morning tranche of 6 problems, but wasting too much time on but one in the afternoon, except for which he most likely would have scored very near the top. Stan uncovered Gary when he out of interest reviewed his exam paper, instantly recognizing the power and ferocious competitive spirit displayed therein, astonished (and horrified) that no one in the department even knew who he was, to some extent rectified when Stan did make it a point to make his acquaintance. Another case (in my mind somewhat more unhappy, if not tragic) was Alan Arkawy, an exceptionally clear mind and manifest talent, undeniable strength in mathematical logic. Alan's mind was of the order that, while taking a graduate class from a leading logician who was using the draft of his soon to be published ground-breaking work as the class text, he discovered a major logical flaw in the exposition, immediately acknowledged by the prof, causing him to postpone publication for substantial revision. (In the light of this though, the professor gave Alan a B grade ….. for not turning in the homework). I have always thought it regretful that Alan did not become aware of Stan (and vice versa)

until we were in one of his Set Theory classes together, unfortunately too late, as given that Stan's subject was logic, a closer association between the two might have altered the course of Alan's trajectory, fast-tracking him to commingling with the movers and shakers in that arena and perchance leading to his (predictable) productive participation therein.

In my office chats with Stan I became aware of the extensive intellectual underpinnings of Stan's thoughts (and actions) regarding education. Somewhat disingenuously he described his deep, abiding, and profoundly emotional interest in education as a 'hobby' …… some hobby. As he rarely talked about his life prior to his entry to the U of Chicago at 16, I often had the impression that he did not really have a childhood, adolescence, but rather had sprung fully formed from the forehead of Robert Hutchins.

From 1929, age 30, to 1951, Hutchins first as president, then chancellor, devoted himself to the realization of the University of Chicago as a 'true'

university fashioned on the historically developed ideals probably most cogently delineated in Cardinal Newman's 1852 publication, 'Idea of a University', such an institution of very serious societal intent, critical in conception, structure and content to the production of citizens able to properly, effectively, morally function in the larger society. With a content of the Mortimer Adler's 'Great Books' as the undergraduate 2 year curricula, the university was organized with maximal simplicity, every thoughtful, meaningful aspect designed to promote, foster, facilitate its optimal functioning. Professors and students were indistinguishable outside the classroom, all mixed with all, a professor was 'Mr' so and so, not 'Professor' so and so, meals together, a 'community' of scholars. Course attendance optional. Entry at an early age for the interested, no high school diploma necessary. One exam at the end of a course, pass or fail, no grades, no punitive measures if fail, not recorded in permanent record.

The University of Chicago, the one (and only) university in America that has approached the ideal of

a ‘true’ university, had an enormous impact on Stan. Not only thriving on the vaunted intellectual freedom, steeping himself in the Greek classics, the Greek philosophers (in the original language), philosophy, mathematics, literature, music, the arts, he also, assuaging deep curiosity, absorbed the tenets on which the university was based and organized from discussions with Hutchins, Adler, Stone, and others. He understood full well and took to heart the relation between the conception and philosophical basis of this university and the fact that during this period the U of Chicago produced the most gifted, productive, creative practitioners in every subject, overwhelming in number the products of other universities. At Rochester Stan played a game in the commons room, he against all, you named a mathematician or physicist of a certain caliber and attainment trained in the early 50’s anywhere in the USA, he would match this with one from the U of Chicago. The loser was the one who ran out of candidates ….. he never lost.

The Achilles heel, also a lesson not lost on Stan and one which he wrestled with in his later periods of

trying to replicate the U of Chicago 'experiment', the element which ended the U of Chicago according to Hutchins' conception upon his leaving the chancellorship in 1951, sun setting on Camelot, was, you guessed it, funding. The funding was largely dependent on donors, gifts, benefactors, most of whom grew restive and doubtful, the coffers getting emptier and emptier as time went on …… This was the essential problem Stan had to solve were he to ultimately establish a new U of Chicago in the 1970's.

Stan's interests in education were of course not confined to the university but were assiduously pursued, with an even more emotional fervor, through the primary and secondary levels. Though we never discussed it, my guess was that the motivation for such stemmed from his own harrowing experiences in the public schools of Cincinnati, searing in him that the schools had a great deal to answer for, that they held the power to unleash the full, healthy potential of the child just starting out but grossly abused this power to produce with gruesome uniformity damaged, psychologically twisted, misshapen, confused beings

with little connection to their fundamental and fulsome abilities to ultimately be creative, rational, mentally self-reliant and independent adults, trusting in their own minds and outfitted with the mental tools to exercise such. Stan's anger and rage palpable, he devoted considerable energy to his lonely vendetta to even the score (read set things aright), awakening and enlisting in the struggle as many people as possible along the way….. some hobby.

Having little regard for what passed for formal primary and secondary education, viewing it mostly as a hindrance to the development of the children, Stan despised colleges of education that permitted potential teachers to slide by with watered down versions of their subjects, in actuality ensuring that they really did not know their subjects at all, noting that the end result was that teachers came from the lower 5% of the university-educated population …. for him, an expert in the pedagogy of mathematics, simply knowing (really knowing) your subject was 80% the requirement of being able to teach well, which

indicated where efforts should be concentrated in the development of would-be teachers.

Always putting his money where his mouth was, Stan frequently visited the primary and secondary schools of Rochester, pulling up unannounced to request an audience with the principal, whereupon he would ask to teach a math class to whichever level during their 'math' time. With his practiced, psychologically acute powers of persuasion, he was never turned down ..... skills honed perhaps in part in working with Bruno Bettelheim at Bettelheim's Orthogenic School in Chicago (devoted to the cure of autistic children) or perhaps with the juvenile delinquents in Chicago, another project. Stan, with an innate love of children, had a savant ability to enter the world of the child, gaining his rapt attention, and holding him enthralled as he led him through some magical mathematical ideas, often proving that, in the right hands, children could be brought to understand the most abstruse of mathematical notions ..... these efforts, yes, a contribution but only part of Stan's agenda in being there, it also affording him the opportunity to, from

the inside, keep track of the state of American education, permitting him to get a feel for current pedagogy, the quality of the teaching staff, and an accounting of the textbooks that were being used, the disheartening conclusion of course being that throughout the 60's and 70's American education was on a steep slide downwards (witness the 'new' math, an obscenely misguided stab at getting school children to 'understand' arithmetic), never to recover, and leaving us with the laughable (if not so tragic) status quo of today.

Given my own love of children, and my own interest in education, it was a supreme (and instructive) pleasure to watch Stan with a group of children, regardless the circumstance. A particular occasion, we were an afternoon with Stan's son Peter, age 10, and a bunch of Peter's friends, playing baseball, running in the park, maybe it was a birthday…… Before long Stan had the kids crawling all over him, plaguing him, hanging onto his legs, tormenting him as best they could …… finally having enough, I was stunned to hear him, in a 180 degree turn in persona, very loudly and roughly shout

at them to leave him alone, this an extremely effective ‘act’ designed, as he explained, to achieve a result and without lasting effect on the elastic, malleable, resilient psyches of the boys so treated ….. another lesson for me.

Stan was utterly fascinated with how the knowledge in one mind is transferred to another’s, be it professor to undergraduate, or school teacher to grade school kid. A complex psychological process at which he himself was eminently proficient, he admired others who could shed light on it …… H G Wells in an unknown essay, perfectly describes the mental and emotional machinations in play as two children, a boy and girl are introduced to multiplication, the one succeeding through a faith that the ‘answer’ will always be the same, the other not so sure and therefore losing footing on the climb to further success ….. Stan’s reverence for this piece when he read it to me blatantly apparent, he gave it his highest accolade, it was ‘sublime’.

And so passed my freshman year, only made palatable by my discovery of and subsequent association with Stan ….. indeed for me he was an island of sanity, rationality, intellectual freedom, an island floating on Grecian clouds, unmoored to accepted dross of academic life decomposing below ….. and he was unique, the only one of stature, a fact expressed in my very juvenile outburst one day that except for him I would have lost sanity that year, that he 'saved' me, a sentiment I'm happy to report that he discounted as being a tad overstated, a tad overwrought …..

As summer loomed, Ron Bunch and I laid plans to drive the Pan American Highway from the USA to the southern tip of South America in his dark green top-down Morgan, difficult now to imagine a journey more ill-conceived, in part because large parts of this highway were yet figments of some planner's imagination ….. Ron backing out at the last moment, I at loose ends wandered over to Stan's office, the building deserted for the summer…… By rare accident of fate, Stan was there behind locked door, but of course answered my knock, let me warble on about

the defunct plans, and then invited me to live at his house with him and the family, Carol and the three children, Jonathan, Susan, Peter……. And so began the most exciting, intellectually intense, revelatory year of my life.

SPRING 1966 – WINTER 1966

The Tennenbaum's lived in a big rambling Victorian pile perched on a corner, the green yards fully surrounding it, a protective moat, the street in front large and busy. Kitty corner to a massive, flowing park, it was a mile from campus, as the crow flies, assuming said crow was not spooked by the sprawling city graveyard lying between.

A cavernous basement the foundation, three stories layered on top, steps up to the ground floor containing a slightly worn interior, casually comfortable, of living, dining, piano alcove, kitchen, office space. Upstairs the bedrooms for the family, up more stairs my 'garret', an angular room looking onto the street, angles generated by the gabled room, the 3rd floor actually quite spacious consisting of another largish bedroom occupied by the delectable math dept secretary, Gail Smith, she at 23 an 'older' woman of melting allure, plus roomy attic big enough to easily accommodate the ping-pong table, site of nearly constant and

fearsome battle between me and Jonathan, or anyone else silly enough to get in the way.

I was immediately at home with the family, seamlessly accepted, the whole of the house open to me, meals (of great informality) with the family, an open, hospitable air permeating, no stress, no friction, no strain …… Carol, quiet and reserved, calm and gracious, ran the house, organized the family to the extent that that was possible, with tranquil, competent efficiency, she had given up on producing lavish meals upon realizing that Stan was not much interested in food, ate when he was hungry, little conscious of what that might be. Jonathan, 15, was busy with his university math and language courses having withdrawn from high school, unhappy in the experience. Sue,12, was sailing reasonably smoothly through junior high, she also a flute player. Peter, 10, was not sailing smoothly through 5th grade, eventually becoming another test case for Stan's ruminations and adamant stance on education.

This was the setting for me, fly on the wall, to observe Stan up close, to see, learn, find out curtain pulled away from the window how the world, particularly the academic world, really worked, an unparalleled vantage point for an unparalleled education, me transported in a moment into the living, vital milieu of a serious, notable mathematician at the forefront of, cognizant of, and contributing to virtually all the significant, key, important intellectual endeavor in his field at that time.

Being with Stan was mentally electrifying, reverberations from a single exposure sometimes lasting for days, with him you were transported not to a different level but to a different world ..... his mind was an incandescent flame, inextinguishable, like the hyped up metabolism of the fighter pilot, always 'on'. At some point diagnosed as a manic depressive, of which he was scathingly dismissive, he ran on high octane, boundless energy expressed in movement and in talk ..... talk talk talk ..... talk talk talk talk talk talk talk ..... but talk not like any other, the quantity not inversely proportional to the quality (as with most

people) but rather of uniformly rich content and interest, if anything monotonically increasing as the volume supernova'ed outwards ….. at one time with a note of frustration, he remarked, 'rob, the only trouble with you is you never learned how to talk'…. not exactly the case, it was more that as the little grasshopper I wasn't persuaded that I had anything to say that could possibly be of interest to him.

Stan lived a life of deep romance, in the broad sense of the word ….. life was inordinately precious, it was in your own hands, you did with it as you pleased, you made it up as you went along, each day was high adventure , you exercised your creative freedom to the full. The societal designation of tenured professor was perhaps the only accepted exodermis that would permit such a roiling independent spirit to live, if not flourish, even that in the end proving too confining.

An immense sense of freedom pervaded when one was with him. Everything (I do mean everything) was worthy of notice, examination, analysis, of clear, rational, penetrating contemplation. (Witness the talk he gave in a number theory class on the raising of

bees.) Devoid of preconception, searching with the fresh eyes of Magellan, the subject brightly displayed in his high intensity intellectual spotlight, Stan always ferreted out, elucidated the essence, the essential. He always urged a questioning skepticism, never take anything on face value ….. Columbus was a brilliant explorer who discovered America ….. really? ….. how could such an idiot, ignorant of or disbelieving the calculation by the Greeks of the circumference of the earth, imagine he could make it to China ?

His actual speech, accentless Midwestern, was rendered in elegant no frills language each word, phrase plucked to formulate with precision what he wished to convey ….. as with most of the crowd I came into contact with through Stan, it was richly strewn with descriptive anglo saxon terminology, which usage, never gratuitous, was invariably as pointed out by my friend John Flavin of sharp nuance, specific and refined to making the point …… when the hysteric (according to Stan) John Myhill called Ralph Raimi (whom he had just met) a 'cunt' to his face, Stan noted that this was not a simple insult, but a truly precise

description of Raimi's fundamental nature. Starting off measured and low-toned, he frequently enough as he got into the meat of whatever matter he was discussing built into an emotional, excited frenzy, flecks of white spittle in the corners of his mouth, seeming out of control (but as I told Alan, really an aware, controlled out-of-control) …. but never to the point of lost clarity or well-structured sense.

Stan had an enormous imagination …… colorful ….. very visual, supple, fluid, creative, at times fanciful (let's say) …… with few masterfully-executed painterly strokes he could place you inside a hologram as real as your corporeal self ….. my mother had sent to me a bright yellow bathrobe she had made out of a very thick blanket, with it on I appeared an outstandingly luminescent yeti …… on first sight, Stan suitably inspired, began visualizing an entire clan so clad appearing out of nowhere and making their way, this being dark and grey winter, down one of the major arteries from Canada, silent, ominous, spectral shapes descending on America heralding 'childhood's end', bringing perhaps enlightenment, perhaps hell-fire ….

the ‘Men From The North’….. he was only half-joking when he tried to convince me to carry out this vision ….. occasionally this imagination did run away with him, as when I returned from Cornell and was describing where I had stayed. Indicating that he had been there, further enhancing my description, I rumbled him with my evident doubts that we had been in the same place, to which he good-humouredly gave in with ‘Everybody has some bullshit in them’.

Stan’s imagination greatly informed and sculpted his mathematics ….. always urging Jonathan to ‘make a picture for it’, he was far more trustful of the truth of a thing if he could geometrically ‘see’ it in shorn simplicity. His own extraordinarily beautiful (largely visual) proof of the irrationality of the square root of 2 radiates this insistence. For Stan mathematics should be concrete, hands-on, the proof of any statement, no matter how complex, could, if the keys were found, be written on a single sheet, most often attended with the right ‘picture’ ….. it was this persuasion, prejudice if you will, that leaned him towards Klein, Hilbert (Geometry and the Imagination), Courant, Polya,

Poincare, made him dismissive of, distrustful of the Bourbaki, an effort he philosophically opposed as being inimical to the creative and continuing flowering of mathematics. (Andre Weil, at Chicago when Stan was there, was the purported head of the Bourbaki. Much of his life spent trying to solve the Riemann Hypothesis, Stan claimed that he used to walk around the commons room asking new students how old they were, and if they were over 21, used to cackle 'Ha!! ... It's too late for you!!')

The visual, pictorial current ran pervasively through his mathematical undertakings ….. though Paul Cohen had elucidated much about the Continuum Hypothesis in a formal way, Stan remarked somewhat wistfully that he still wanted to know how many points there were on a line, emotionally unsatisfied with the 'formal' status quo. On a walk with Eberlein, someone brought up a little puzzle dealing with the waterline, would it go up or down, when the boat in the water was loaded with contents dredged up from the bottom, or something like that, it fascinating to watch Stan inventively developing physical scenarios

involving ropes and buckets and pulleys to try to get a handle on the situation. Stephen Smale had recently proved a celebrated topology theorem regarding mappings of a sphere into 3-space. As explained to me by Newc Greenleaf, he showed that a sphere could be differentiably everted, turned inside out. Making the cover of 'Scientific American', it involved a series of complex transformations which could (with extreme difficulty) be visualized. I'm sure Stan had made the effort when he announced that the only person that ever lived who could actually have done this was Michelangelo. Indeed when he made the film of him teaching two boys in an effort to demonstrate how educational materials might be generated with film, he chose a very visual problem, a chess board with the two opposite corners missing, the problem to cover the remaining board with dominoes ….. he after much sweat and labor on the part of the boys revealed the elegant (and visual) solution with, 'That is mathematics.'

With a charged and uncaged energy, Stan found sleep nearly impossible, would be as much 'on' late at night or (very) early in the morning as at any other time …..

he once mentioned that some people can't sleep because they are starkly afraid that they won't ever wake up again, I later wondered if that was part of his trouble, certainly I think that he had a deep aversion to wasting life with much of it ….. at times this sleeplessness would get out of hand and, with a casual disregard cultivated since his student days Stan would down one, then two, and so on, until 9 or 10 sleeping pills later he would be trying to relax, as wide awake as if he hadn't taken anything …… on the other hand when he wanted to be more acute, he would cavalierly ingest 'uppers', dexedrine, other amphetamines, easily available in those days …. this use of pharmaceuticals was common enough amongst mathematicians, motivated in large part I think by a desire to enhance their mathematical abilities ….. when you spend your life 'bloodying your head' as Halmos put it, you will look to anything and everything to increase your power to progress ….. this interest in and use of pharmaceuticals extended to newly appearing offerings of hash, grass, pot and for some the hallucinogens LSD, mescaline (peyote), psilocybin (mushrooms). Stan's drug of choice eventually became many years later delta 9 THC, his term for it

‘vegetable’, again my belief that in the main it was used to enhance perception of reality, particularly as it related to mathematical insight.

It was during one of these periods of sleeplessness that my brother Rush visited, sent by his parents to reconnoiter universities he might attend. Stan in overdrive, his magnified voice diminished not a whit by the floor that separated us from the bedroom below, Rush was astonished that one could talk uninterruptedly, seeming without time for breath, throughout the entire night …… 4:00am found Rush in the living room, caught up in one of Mozart’s operas playing on an old 78rpm …… Stan descended, prowled about a bit, then asked Rush what he thought of Mozart …… Maintaining family tradition, Rush, not knowing what to say, kept schtum. Stan must’ve thought we were a family of mutes. (Subsequently an opera singer of note with innumerable Mozart operas under his belt, it is now difficult to get Rush to shut up about Mozart.) …. Not missing a beat, dawn slowly breaking, Stan delivered a two hour virtuoso soliloquy about the composer.

The point here is Stan's enormous cultural reach, stunning in its breadth, characterized by deep perceptivity and sensitivity, opinions, insights, understandings always gained directly, always his own, always exposing the core of the matter. His conclusions invariably illuminating, the family and I attended an evening of Mozart arias by a woman singer at the open-air theater in the park across from the house. Deeply attentive, Stan praised the performance with the comment that the singer nearly reached what Mozart originally had in mind. Upon emerging from a popular film depicting the life of Jesus, Stan complained the portrayal of Christ as one who spoke above the heads of the disciples staring into the distance, never looking at them directly.

I always had the impression that Stan's life started at 16 at the U of Chicago, that an unknown world yawned before him, one courtesy of Hutchins' vision, and provided the scope for an insatiable curiosity to revel and explore full bore ….. not only did he steep himself in the Greece of Homer, Socrates, Plato, Euclid, and

Archimedes but also the ‘great books’ and, more broadly, he feasted on timeless music, literature, theater, film (when ‘Les Enfants du Paradis’ was in the local Chicago movie house, he went to every single showing) …. a milieu of creative foment, this was also the world of ‘the second city’ and live readings by Dylan Thomas, the location of Bettelheim’s Orthogenic School where Stan for a time worked ….. I also had the feeling that it was here that he ‘constructed’ himself, block by block, building an intellectual, philosophical, metaphysical foundation, of course informed by the Chicago curricula, out of his own rational thought, a defined person fully integrated, no contradictions, confusions, imponderables, a cathedral of clarified character and mature persona.

With a full court press Stan brought his intelligence to bear on the whole of life, comprehensively addressing its every aspect and then, determinedly at a very abstract level, exhibiting in action and deed the fruits of his analysis. This was the ‘rational’ life which so centrally characterized him. Most are content to float in a sea of vague understandings, distorted half-truths,

murky and opaque contructs. Stan not. Of course this is singularly rare, others of this ilk perhaps Richard Feynman, Ayn Rand, Bruno Bettelheim, but these I knew not personally, Stan I did. The stories of Stan's histrionics, his outlandish behavior, his disregard of all convention, abound. It is these that people seize on, refer to in an effort to describe him. But such interpretation is only through a prism of conventional, unexamined, bourgeois sensibility. Incomprehensible, erratic, unpredictable, enigmatic, puzzling, bewildering ? Pish tosh. Passionate, yes. But in truth, Stan's behavior was unfailingly consistent with, dictated by deep wellsprings of hard won, rigorous thought. If you understood Stan's mental landscape, you easily understood his words and deeds, rational and coherent to the core.

With a prodigious memory (a byproduct I thought of his laser, focused, in the 'now', attention) Stan could incisively talk about a horizon to horizon range of matters, literature no exception. Much absorbing time was spent with Stan reading pieces of commendable literature, he maintaining a running commentary and

analysis ……. for him the great mystery of the greatest of writers was their ability to express reality with ineffable fidelity and he was at pains to demonstrate this in the pieces we read ….. it was in this way I was made aware that Plato's Socratic dialogues were not exchanges by cardboard cutouts merely to develop philosophical points, but were on the contrary deeply human exchanges, replete of emotional ebb and flow by characters of rich humanity and personality. Stan himself read very slowly, he mentioned that 'War and Peace' was one of the few long books he ever finished, but what he read he really read, bringing me to understand what that means, slowly absorbing every word, every phrase, every sentence, building in his imagination the whole of the substance, applying a creative attention to every aspect, every nuance of meaning and suggestion. Vitally he wanted to know how it was done, what did it take to author an imaginative work, and ever extending himself, ever testing, ever pushing into new fields, he had begun a novel while an undergraduate, never to be completed, the opening pages of which he read to me, re-igniting his excitement in his attempt. Characteristically Stan made it a point to know, meet and talk to current

authors (as he did with people of merit in all fields of human endeavor) of estimable achievement (in his judgment). Uncharacteristically he met Ayn Rand, complimented her work, but was unable to engage her further than that.

Stan had a great love of Dylan Thomas, the poetry and the man. Attending his readings in Chicago, Stan's salient point was that no matter how drunk before or after, on stage Thomas never ever proffered less than perfect rendition, faultless delivery, perfect vocal inflection and intonation, no slur, no stumble, no slack. These readings, again on the 78's behind the couch, we at times listened to together, Stan ever marveling at the enormous visual imagination evident in his expressive language, a particular example being his description of crossing the Atlantic by boat to arrive at the New York harbor …… now introduced to what has always remained for me the greatest of all poets, I often lay motionless, alone, for hours in the living room, the lazy-boy chair horizontal, enraptured, transported by that voice, the words not always understood, but their sounds symphonic.

A few years later, as a senior, I had through a quite analytic process the previous summer, decided my life lay in architecture, prior to which I had had no experience of or exposure to whatsoever. This turn of events was unknown to Stan. As we one afternoon were running errands in the car, he began mulling over my future, suggesting that I become a psychiatrist. He accepted as somewhat reasonable my objection, that in such a life I would in fact affect (presumably positively) only a small number of people, at which point I mentioned the nascent preoccupation with architecture. With instantaneous gear shift, he began to talk about Felix Candela, the Mexican architect, virtually unknown by architects in the USA, doing beautiful work with hyperbolic paraboloids, diaphanous, floating shells of improbable delicacy, the strength generated through the geometry, Candela's work unique, originating through his engineering as well as aesthetically architectural talents. Subsequently I did become so enamored of this work that I learned Spanish in a summer so I could live in Mexico, visited Mexico City to see all of his

buildings, and met him at IIT where he was teaching, having retired from active building ….. just one more example of Stan's astounding breadth of knowledge, just one more example of his pervasive influence.

WINTER 1966

In the early 50's the U of Chicago math dept was a cauldron of productivity, the finest such crucible in the world. Marshall Stone was chair, other people included Andre Weil, Saunders Mac Lane, Serge Lang, Paul Cohen, Paul Halmos, occasionally von Neumann, Carnap. Logic students included Bill Howard, Ray Smullyan, and Anil Nerode. Stan's contention was that this was not at all accidental, a serendipity, but was directly related to university philosophy and structure as molded by Hutchins, which not only provided the environment, the milieu of freedom and minimal bureaucracy, so fundamentally necessary to intellectual ferment, but so constituted, attracted the most gifted, established and student, to come there in the first place. Thriving in this bastion of open enquiry he himself, as an undergraduate, produced important and original results in the newly developing arena of mathematical logic.

His philosophical, educational, and social orientation in regard to mathematics (and parenthetically everything else) burnished by the U of Chicago pure flame experience, Stan ever after carried this with him like a sheik's fold-away tent in the desert, to be reassembled and dwelt within wherever he next set up camp. As I mentioned Stan didn't enter your world, you entered Stan's world, as disorienting and confusing as that might be for some.

The essential lesson from the U of Chicago was that mathematics (and science) is a deeply human activity dependent on individuals, their personalities, cultural orientation, character, prejudices, interests, oddities, propensities, their social nature ….. progress, or at least advances, in math, science, technology is not a linear tidal wave unto itself as it is now fashionable to portray it, but is intimately the outcome of very human endeavor, subject to the frailties, foibles, lack of communication, jealousies, start/stops, personal friendships and animosities, indeed ultimately as subject to human interaction and nature as anything else.

That being the case Stan was as much interested in the 'sociology' (education an element thereof) of mathematics as in the mathematics itself. In keeping with his penetrating understanding of 'how things worked', he kept in personal contact with enormous numbers of mathematicians, knew precisely what they were working on, what they were thinking about, and what their current problems were, and promoted advance by cross-pollinating, communicating, relaying the problems of one to another, the two quite possibly completely unaware of each other, a one-man (international) switchboard. Mathematicians by and large a solitary, solipsistic bunch, Stan was the inverse, a restless moving line ceaselessly, incessantly connecting the dots. In my time in Stan's house, I was the witness, his shadow, a parrot on the shoulder, of this continual activity, hundred's of phone calls placed here, there, everywhere, first call, 'I have this lemma but it only works if this integral is bounded within such and such, but I can't see it'…… second call (to England), 'Tony, you did some stuff on integrals over the complex plane, what about this one?'…. and so on.

My impression is that Stan considered his very conscious role as quintessential Malcolm Gladwell 'connector' of equal importance to his own theoretical output regarding the advance of mathematics, as part of his 'place' within mathematics, perhaps more so. For him development, discovery in present day mathematics was nearly a communal, living breathing enterprise, in which, the problems being as difficult as they now were, were subject to cracking only through collective effort, each contributing but a piece to the ultimate puzzle. Indicative of how central this was to his thinking, he very seriously commented that Feynman did not 'hear the music', was unconscious of how essential hands joined together, dance in a circle collaboration was. (On the other hand, he deeply admired the 'Feynman Lectures on Physics', a stupendous achievement Stan was certain Feynman would be remembered for, over and above his theoretical achievements.)

Regarding his 'place' in mathematics, I was present when a student asked him how good a mathematician

did he himself think he was, rather impertinent, but one to which Stan responded: 'average' ..... some 'average'. Sure if your evaluating basket also includes Gauss, Hilbert, Euler, Poincare, Godel, Riemann, Cantor, and Galois, maybe then you get an 'average' but, in so describing himself, Stan was actually indicating the standards to which he held himself.

This was strikingly evident in the amount of research in mathematical logic that he published ..... which was almost nothing. Stan had a religious reverence for the written word, and considered a work's value measured only by its degree of permanence ..... think of Euclid's 'Elements', Newton's 'Principia', Gauss' 'Disquisitiones'. With his great pride and unwavering honesty, Stan, regardless of his substantial (by any measure) of ongoing, original, creative theoretical achievement, would not publish, preferring to verbally spread his results about to the relevant people, my feeling that his 'reach exceeded his grasp' and that he did not feel his results sufficient (by comparison) to commit to posterity. But I think there was more to it than this, that this was in part 'cover story'. Stan had a

neurotic aversion to publishing that had little to do with quality of content or indeed ability to write (Witness the 5000 pages of notes he left behind him.) By way of contraindication, his spoken English was impeccable, clear, precise, consummately communicative. Further his writing echoed his speech, always sensitive of phrase, delicate of nuance, pithy of content, models of scholarly clarity. Indeed his very handwriting was elegant, well-formed letters, a flowing script, not the misshapen pinched hen scratching of the average mathematician, impossible to decipher. No, the 'cover story' is not enough. More to the point I think that Stan had a great fear of being 'measured', of being pigeon-holed, categorized, of putting down anything that might lead to misinterpretation and wrongful assumption, something at variance with his perception, results he wished at all costs to avoid. (Though he wasn't much of a candidate for their business, Stan had a high regard for excellent publishers, Springer Verlag whom he urged me to visit on a drive through Germany being one, he on personal terms with the director.)

Stan, habitué of the 'true' university, held colleagues, friends, acquaintances (particularly those from the U of Chicago) to the same standards to which he held himself, faithful only to the coda of a member of a 'true' university, allegiance only to the elucidation and dissemination of truth. He had extraordinary disdain for the 'publish or perish' phenomena of the 60's and 70's, deeming it part of the corruption permeating academia and responsible for little more than clogging up the system with fourth rate garbage. Vigilant to sophistry, he sat in judgment from Olympian vantage, never shying from acerbic, infuriated comment. When Paul Halmos brought him his pre-publication notes of 'Naïve Set Theory', he said simply 'Paul, this is shit'. (I am not sure there was ever any love lost between the two, when walking with Halmos to one of his talks at the U of New Mexico many years later, I mentioned Stan at which point Halmos asked if he was 'still hanging around', he clearly as much as anyone completely baffled by Stan's existence. Never one to take a slight without parry, when Paul asked what I was doing, I said in barbed response, 'hanging around'….. which quite amused him, his returning 'I like a guy who leads with his chin.'…. I never did know

Stan's disapproval of the book, it being the text from which I learned my set theory.) Stan was particularly contemptuous of any debased writing that was done for money. When John Myhill was at Buffalo, he and Stan, long-standing friends, contentiously fell out over Myhill's productions at the instigation of an educational publisher.

The more I came to know Stan, the more I was aware of various neuroses, a gestalt explicable I suppose by one of plumbless psychological insight. Among others, not content in pejorative critique of (in his eyes) the failings of friends and colleagues, he had a compelling compulsion to 'get the goods on', to ferret out for each and every some weakness, some moral lapse, some damaging attribute or act, some glaring fault of character. No one escaped. Readily accepting at that age reasonable, benign 'explanations' for any behavior of my Lancelot, in retrospect this seems more than strict adherence to searingly honest appraisal but rather some kind of setting himself apart, self-affirmation of his purity, a leveling of the playing field, a girding of intellectual loins for future conflict.

Myhill's sin was accepting the book contract, Feynman's weakness was that he could be brought to his knees with 'Richard, you can't solve this.' Anil Nerode tells of a party hosted at the house for a number of friends, some coming from considerable distance, during which Stan systematically insulted each present one by one. A smaller example, when a physicist friend, MIT PhD, passed through on his way from Caltech to visit MIT, excruciatingly funny guy whose every third sentence was sexual innuendo, inexhaustible, but one who described physics as a huge field of interlocking cogs, wheels, nuts, bolts, Stan remarked on the way back from delivering him to the train station that he was one of the few who escaped the indoctrinal horror that was MIT, but upon my demurrer, that he had only 'almost' escaped, did fully agree.

Stan's antennae were hyper-sensitive to phoniness, quackery, sophistry, pedantry, perversion and obfuscation of 'truth' within the walls of academia, particularly as it was located in the philosophy department. Though everyone had within them a

component of ‘bullshit’, many (most?) academics made a living through the manufacture of it ….. these were the ‘cockroaches’…. Stan was RAID, the eradicator. Within the math dept, Ralph Raimi was a cockroach, Stan scathingly dismissive of his grand-standing dramatics regarding a supposed cheating scandal at the U of Rochester, Raimi seizing the self-aggrandizing high ground, to pathetically pontificate the decayed state of student affairs for which he had the elixir (rant on huckster) to restore undergraduate moral health. The philosophy department on the other hand was a nest of ‘cockroaches’, at times requiring Stan’s fumigation services wholesale. When Norman Stein’s brother, a noted scholar of Greek philosophers, addressed that department, Stan’s introduction was a torrent of (deserved) abuse towards the gathered so vitriolic he could hardly, nearing apoplexy, get it coherently out. One well known exemplar published a book in which Stan identified a 100 or so substantive errors, delighting in accosting the man quite by accident in a grocery store, leaving the hapless roach wondering with his ‘I have read your book.’, nothing further. After an afternoon conversation over a backyard fence at the Institute For Advanced Study

with a rather talkative visiting historian, Stan's rather terse assessment as we gained the back door, 'A phony'.

With any individual Stan's stance was 'What can you do? What are you made of? Who are you ….. really?' Relying completely on his direct experience of you (he once commented that anyone secure in their own mind, trustful of their own judgment, did so), he eschewed as irrelevant all secondary indicators, degrees, medals, awards, grade-point (he pointed out that the brightest kids tend to have spotty academic records because they simply can't be bothered except with what they find interesting), commendations, scores, positions held, standing, in his assessment. Himself without degree other than Bachelor of Philosophy, relying only upon his 'white plume', his actual achievement and the concomitant understanding of this by his professorial cohorts for his navigation through academia, he was deeply distrustful of any necessary relationship between one's capability, potentiality, value and the secondary indicators of such. His stories of counter-examples

were legion. One such, questioning the actual meaning of a PhD, related in his number theory class that fall semester, concerned an outstanding theorem, yet impervious to attack by sterling minds over decades, guessed to be certainly true, special cases calculated in significant number, PhD's awarded for various attempts at proof. Undaunted a brash graduate student calculates the next case, finds the theorem fails ….. voila, question answered, surely worth a PhD? No??

More perniciously, Stan was horrified, vitriolic in his condemnation, when pursuit of the secondary indicators (grades for example) replaced the sacrosanct pursuit of knowledge, understanding, endeavors toward truth. This (most common, perhaps the norm?) was a perversion of the idea of a university, of your very purpose in being there. Most unfortunately, though, this pursuit was aided and abetted, encouraged, promoted by most institutions to the degree they diverted from the conception of true universities.

Perceiving the development of mathematics to be a deeply human enterprise, Stan placed great store in the interplay of its social connections, he intentionally promoting these through his proactive role as honey bee pollinator. Beyond this he was acutely attuned to and interested in the influences that people in the game had on each other, in particular the depth of influence of mentor (professor) on neophyte (student). The importance of these connections (connections that Stan assiduously tracked, kept mental notes of) is codified today in the website The Mathematics Genealogy Project which details mathematicians, their advisors, and students, providing a tree transparently revealing the lineage not only of subject matter but also of taste, prejudices, orientation, and philosophical slant. It would greatly appeal to his sense of humor the irony that Stan, with a profound influence on large numbers of mathematicians and students, is not included in this atlas.

Stan of course decried institutionalized influence, the schools and universities, which in the main he

considered to be machines for the systematic stunting and crippling of initially healthy minds and spirits. In his one man guerilla war he personally had huge impact on large numbers, particularly students (I am a case in point.) Not simply a magnetic personality, I think Stan got to, reached, those he came in contact with through his scorching honesty and piercing sensitivity, an ability to comprehensively grasp whom he was dealing with married with consummate command of technique to enlighten. One illustrative example that comes to mind is Mel Nathanson, on his way to becoming a doctor, whose life was completely altered when he took up Stan's suggestion to get into mathematics ….. but there are hundreds of such examples.

Particularly at high levels, vaunted intelligences are acutely concerned with their abilities and potential, as evidenced in their abrasive competitiveness and endless comparisons with their peers. In this setting, a teacher, professor can have extreme emotional impact on one of his highly strung charges. This can easily take a right turn, the field littered with the corpses of

budding mathematicians, demoralized as to their capabilities by a callous, often idolized, figure. (It need not be a mentor, something else, like competitive exams, can have equal effect …… Stan once mentioned that Newc Greenleaf, a very good mathematician, never really got over not winning the Putnam competition …. or perhaps it was not being offered a position at Harvard.

Acutely aware of, deeply sensitive to the emotional state of a student, and ever intent not to inflict damage, Stan's delicate interactions with a grasshopper could be nearly surgical in their insightful concentration. (Stan once said that he could never be a doctor, that he was not man enough to hold another person's life in his hands.) One afternoon Stan came storming into the house, clearly distraught, followed by a handful of gloomy faculty members, John Dollard and Norman Alling among them. These had been the committee to administer PhD orals to one of the grad students. Shaky to the point of collapse, the student lapsed into near catatonia under rather benign questioning, unable even to indicate how he might

approach the problem of determining the curve of minimum time, the trajectory of a ball rolled from A down to B. Stan, appalled that he could be involved in what to him amounted to psychic torture, spent the afternoon denouncing any system that could culminate in such a spectacle.

Mathematical achievement so utterly dependent on such, Stan had an overweening interest in what constituted intelligence, innate capability. In no way did he imagine that humans are provided equal measure nor did he think that capacity was unlimited. His only point was what provided for the maximal realization of what was handed out. He was not dismissive of IQ tests, but thought of them as rather limited instruments for predicting achievement, measures that should in no way limit or affect one's ultimate strivings. He thought it child's play to determine IQ, but more broadly innate capability in general, through direct observation and interaction, noting in passing that all truly able people secure in their own judgment made their judgments directly without reference to outside data or measures. He

himself had a Santa's bag full of mathematical concepts, puzzles, theorems with which to accurately determine basic ability, as he did with Mel Nathanson when he ran through the proof that an orthogonal vector set could not exceed in number that of a spanning set in a finite vector space, gauging Mel's aptitude for mathematics by his ability to follow the proof, happily pronouncing in this case Mel's undoubted bright future should he so choose to enter the game. He readily acknowledged that for every individual there was a limit to abstract understanding, commenting that if the abstraction was sufficient, over one's head, for the individual it simply didn't exist, wasn't there. In one instance he held up one hand, fingers widely stretched and said if you didn't immediately understand that the number of spaces between the fingers was one less than the number of fingers, then you could yet make a contribution to mathematics but it wouldn't be much. One moment that occurred, Stan remarking on his failure to grasp a paper that had just surfaced, 'Perhaps I just don't have enough brains.'

With his intense antipathy towards repression of the individual, Stan equally loathed institutional bias, prejudice regarding any group of people, firm in the belief that all groups possessed equivalent native talent, albeit degrees of which were distributed among the individuals of a group. In particular he had a sublime sympathy for the American negro, contending with a vile racism inclusive of supposition of intellectual insufficiency. Viewing black 'language' of the ghetto not as degraded English but rather as an immensely clever, creative response to their appalling plight, Stan often spoke of his personal experience of ghetto kids, emphatic that they possessed abundant intellectual ability on the par with the whites and that, in the right hands, could easily demonstrate such. Profoundly attuned to the emotional currents of this suppressed people Stan once asked me if I could hear the put-down of the whites in black music. Indelible is the memory of Stan one evening at the Institute For Advanced Study sitting at the feet (literally) of one of the black custodians, intent in that conversation as he would be in talking to Godel.

Perhaps because of his personal trials, Stan had an extraordinary interest in the effects, particularly negative ones, of emotion on normal thought processes, certainly as they related to progress in mathematical endeavor. He thought general mood significant, 'You need to get a girlfriend.', 'The weather is really not good here.', a general disaffection with one's circumstance, or nebulous depression accounting for diminished achievement. More psychologically, he had acute sensitivity for hysteria, regarding it as a markedly disturbing factor, present to some degree in everyone, but dialed up in many to the point of dysfunction. He was an adept at dealing with and alleviating such, through vocal inflection, calmness of demeanor, measured speech, insightful questioning and suggestion. Much of his office time with students had little to do with mathematics but more to do with ameliorating hysteria …… His nephew after a rather poor showing on his high school SAT tests was shipped over to the house from Cincinnati for Stan's 'treatment'. Cognizant that the kid actually had enough brains but was terrified of the exams, he succeeded in sufficiently adjusting his mental set that

on second taking he raised the overall score a couple of hundred points or so.

Stan was a humanist first ('Man is the measure …. '), a philosopher second, primarily Greek rationality though amongst the recent crop Wittgenstein was a favorite, a mathematician third ….. he was not interested in mathematics for its own sake, was not interested in it as a polyglot potpourri of aberrant and irrelevant mental machination, but rather regarded it the highest expression of rational thought, the jewel in philosophy's crown, the noblest of pursuits which, Diogenes lantern in hand, led inexorably to ultimate truth. To the degree that we discussed mathematics it was mainly how he regarded it and its place in the universe of human thought. Which is not to say that we didn't get down to cases, his grasp of the whole of it and his fundamental power to reveal the essence of any particular topic or branch or theorem always a source of wonder …… when I inquired about the calculus of variations, he adroitly explained its basic ideas. While waiting for an elevator in the math building on our way home, chatting about Galois

theory, Stan incisively commented that really Galois had merely noticed X …. but followed this with 'but it took 2000 years for someone to notice X'. Looking over my shoulder at my notes on normal subgroups, he casually advised me of their true significance, something which had completely escaped me up to that moment. Prior to beginning his class on number theory in that fall of 1966, Stan spoke of the lofty splendor, the majesty of that most ancient of mathematical endeavor. Remarking on the fact that its theorems are characterized as being both easily understood and extraordinarily difficult to prove, he then enunciated the proof of Euclid's theorem that the primes are infinite, the pleasure (and instruction) being that in Stan's rendition, in his clarion wording and measured cadence, the proof (which after all is quite simple) became a retelling by an elder of an honorable, venerable, ancient tale of the tribe. Bespeaking his conception of the grandeur of mathematics as the pinnacle of human thought, Stan loathed any diminishment of it, any besmirchment thereof, any reduction to the common, any cavalier disregard or indifferent treatment. He detested Halmos' introduction of the symbols IFF for 'if and

only if' and the tombstone symbol indicating the end of a proof, his point being in the case of the latter that if you're paying any attention at all, if you're understanding what's going on, then you certainly know when you've come to the end of a proof. Which does though beg the question, doesn't the Latin QED (quod erat demonstrandum) do the same, Stan's answer No! No! No!, QED is not a signal of the theorem's end but rather a triumphal, voce bravura, 'I have done it !'

Albeit handled in a highly sophisticated and emotional mature way Stan was exceedingly competitive. It goes with the territory, mathematicians pitting themselves against kryptonite hard Goliath problems, their sling shot brains their only weapon, they must not only have a faith in themselves, but also a faith that they can pretty much take care of anyone else around. With Stan this evidenced itself in a variety of ways. In his teaching there was always an element of challenge, as a student you had to bring to the table a certain strength, a certain chutzpah. Stan knew, and made it his quest to know, large numbers of accomplished

(often well known, often famous) people, not only the finest mathematicians, but indeed those in virtually every field of art and science, philosophers, historians, physicists, writers, actors, businessmen, financiers, lawyers. Though I think a complex of motivations drove this, natural curiosity certainly one factor, I always had the impression of a competitive aspect, particularly with his mathematical equals, a desire not only to learn of, but also to come to grips with, a mano a mano face-off, a testing to see if he could hold his own, a determination to see, if he so chose, if he could fit into other shoes. He often characterized social interactions in terms of contest, winners and losers. We were just dropping in on a mathematician at Cornell, spur of the moment, a friend from Chicago. All very casual, a few people there, a big mattress spread on the living room floor, the kids messing around. Always with a multiple agenda, Stan brought up a number theory problem involving complex analysis that someone was working on in California, stuck at a certain point. This out of the way, conversation turned to hash, Stan just becoming aware of it, very curious. The prof, something of a THC aficionado, mentioned a psychology experiment being run in the psychology

lab on rats, loading them up with mega doses and trying to get them to run up an incline. Stan imagining a horde of high school students on the sidelines cheering the rats on, dissolved into paroxysms of laughter, little able to keep from falling off the couch, commenting with great glee as we got into the car, 'He beat me, he beat me. ' At an occasion in which Feynman delivered a talk, following one by Feynman's friend Freeman Dyson, Stan later talked to Dyson, also a friend of Stan's, to get his take on Stan's comments at a previous seminar featuring Oppenheimer. Dyson was in a somewhat dour mood, not really open to Stan's importuning, Stan's later explanation that Dyson was depressed that, in the back to back talks, Feynman had beaten him. Although he had misgivings about the Putnam competition's meaning and validity, cautioning me as I left for the exam not to put too much emotional stake in the outcome, he nevertheless took the exam surreptitiously at home, pleased with his getting the majority of the problems. One evening, me driving, he sitting in the back of the car, I was surprised to hear him singing 'Who's afraid of Norman Stein?' to the tune of 'Who's afraid of the big bad wolf?'. Amusingly, he would make a burlesque, wholly

exaggerated competition, when on the basketball court with students or playing croquet with Dollard and the younger mathematicians.

In Stan's world time was not the fourth dimension. It simply did not exist. Of no moment (so to speak), Stan lived his virtually structureless existence, subject only to his overarching, grandiose when he was on a roll at 36000 feet, plans and agenda. Time not a constraint, he was even freer to plot the course of each day by whim or design. Lectures ran over (rarely having begun at the appointed hour), the conversations ensuing sometimes moving to the student union or other convenient spot. Conversations started in the office would move over to the house, continue through a bite to eat (hardly could it be called dinner), proceed out on the lawn, carry on unabated into the night, day into night into day into night, merely a blur, of no consequence, in no way modulating the activities, a neutral backdrop to the (very) important matters to hand. All was free form, creatively fashioned, the evening with a visiting mathematician in which Stan impetuously decided to fly to Boston (when flying was

still an exotic experience), immediately on the phone to see who was around, a typical case in point, the norm, not the exception. The house frequent of visitors, these folded seamlessly into the family flow, Stan always fluidly gave them his full attention, the conversations extending from moment of arrival to moment of departure, sometimes days later. Basking in this elevated milieu, reveling in this allegiance only to what was 'important', I yet cringe to this day, the world turned upside down, when I witness one of great stature and accomplishment with worlds of interesting things within, perhaps a Nobel prize winner, kowtowing to the tyranny of the clock, stopping (with apologies) his seminar on time, 'Oh, I'm running out of time'….. when the audience should be on their feet, exhorting in one voice, 'Don't stop! Don't stop! '

Stan was robustly, actively alert to the humor in any situation. Neither slapstick, surreal, nor common, his sense of humor was based in the predicaments of the human condition, eccentricities, situational improbabilities, absurdities, ironies, coincidence,

serendipities, all exaggerated, bolstered, magnified by his fulminating imagination. When a calculus student detailed a fulsome yet completely incomprehensible answer, unknown terminology, to an exam question, Stan paraded it up and down the corridor amusing himself with the notion that the student was a great undiscovered genius revealing for the first time deep insights and heretofore unknown mathematical connections. The wife of an eminent expert in probability, one of Stan's friends, approached him for some help on homework for a beginning statistics class she was taking. Asking her why she hadn't asked her husband for help, Stan broke up when she said that she wasn't really sure he understood the material.

WINTER 1966 – SPRING 1967

The most potent lessons I learned from Stan had naught to do with mathematics but what I shall dub A→B, how to get from A to B, how the world REALLY works. It is a given that one adamantly holds one's life in one's own hands, limited only by imagination and will, how does one achieve any particular goal, how does one get from A to B. These lessons I learned by close observation, by his example, hanging out with Stan through thick and thin, listening and watching, listening and watching, intently engaged in what Stan called my true education.

For even his closest friends and colleagues, Stan's modus operandi, patently successful, was a mystery. To begin with, how could he without credentials (e.g. no PhD), accolades, or paper trail so handily navigate the academic world, secure positions seemingly at will (e.g. fully tenured professor at U of Rochester), even a position (of some nature) at the Institute For Advanced Study? (Stan told me that he could

generally secure a position he was interested in simply by asking for relatively little money …. that may be true but certainly there is more to the story than that.) Additionally how could he, in his unceasing efforts to make his life as interesting as possible, come to know on a personal basis such a vast variety of people not only in mathematics but dotted about in every sphere of endeavor, particularly those of demonstrable skill and attainment.

First there must be the supposition that the world is susceptible to the real, and can be marshalled accordingly, second is the necessity to have the courage, self-belief to act on that. But then the nitty-gritty. The first understanding is that though the world has exceedingly complex structure, procedure, process, rules, law, culture this is constructed by man. It does not stand outside of him, it does not run itself. Indeed nothing happens that is not controlled, instigated, implemented, caused, enacted by man (I'm leaving out of course natural law, I'm talking about how human society works, hurricanes do happen after all). This the case, people lie on a spectrum from the

independent, self-reliant, secure in their own minds, inner-directed (to coin a phrase) to otherwise, wholly dependent on others, hence other-directed, for thoughts and actions. It is the first that are susceptible to the real, they are much more aware the degree to which life is a question of human construct, they tend to run things, and they tend to be the best at what they do. So …. if you want to get something done, they are the ones to associate with. It is relatively easy to separate the wheat from the chaff, the first to the point, direct, unaffected simplicity, razor-sharp scrutiny, the latter of vague intention, pompous, pretentious, phony, inept. By way of illustration, discussing this in the house one afternoon, Stan held up two letters in relation to something he was trying to get done ….. the one from an eminent mathematician was casual, handwritten, a few lines, acerbic, the one from a university administrator typed, formal, flattering, flowery, waffling.

So, with these understandings, how do you get something done, how do you get from A to B. Start from the ground up. Clear your mind of all

assumption, which mainly means to disregard all preconception of appropriate behavior as dictated by conventional, accepted (societal) protocols. So, the guy did solve Fermat's theorem, indeed, stratospheric achievement, but he's still a man, he's not a god, you can talk to him. So he is Secretary of State, indeed, due recognition, but he's still a man, you can talk to him. So he does run General Motors, yes, serious, but he is still a man, you can talk to him. Bring your imagination to bear. Keep B squarely in mind, try to find a route to B, however it violates the constraints of the 'norm', be they outside of you, or, more deeply, inside of you (in fact it is more the self-imposed limitations, your 'place' in society, your perception that it is ordered beyond your control, that upper-bounds your imagination). A small example but amusing of coincidence ….. Stan in Rochester, his B was to reach son Jonathan, now a graduate student at UCSD in San Diego, he without any notion of where he was or where he lived. Stab in the dark, he calls up the library, the phone answered by my brother Nat, also at UCSD, who had no idea who Stan was or that I had lived in his house, Stan's mission to convince Nat to traipse the full way across campus to the math

building in the middle of the night. One of Stan's tried and true gambits, he offered Nat five bucks to make the journey, anything to accomplish the aim. It was only when Nat much later was mentioning this odd call from a very odd character that I connected the dots. (Nat, true son of his mother, undertook the quest, no payment necessary.)

The route to B will involve perhaps many people, carefully chosen according to the guidelines above ….. now you must convince, persuade, a matter of content but equally of form. In this Stan was an adept, a ninja master. He noted the preparation necessary, you must know the background, the history, the teachers of the person, you must really KNOW who you are talking to. Then, where the rubber meets the road, you must consciously present your case with clearly stated prefatory construction allowing the other person to gradually comprehend context and what it is that you are on about (as the British say), what you are seeking. (He once talked to me at length about the eyes and the ancient language they speak.) An instructive nugget, four of us, Stan, a French mathematician he was

traveling with, John Flavin and I were having breakfast at a hotel near the U of R campus. Arriving after 10:00am, Stan asked for eggs and toast, the response from the waiter that breakfast was closed. Stan then engaged him (when this happened it was just Stan and the person he was talking to, no one else existed). As if to a four year old, 'Do you have eggs in the kitchen? Do you have butter? Do you have bread? Do you have a pan? Do you have a stove?' ..... etc ..... until the man patently embarrassed, broke, the concept of breakfast being closed replaced by the reality of the easily available, nearly running to the kitchen to retrieve the request.

Absorbing these lessons through hundreds of encounters, they became part of me, the roadmap for my approach to A→B, if you give a man a fish, you have fed him one meal, if you teach him to fish, you have fed him for life.

Stan was American to the core. With a reverence for the philosophical pilings on which the country was

based, America was a necessary a priori setting, free, egalitarian, for the existence of a U of Chicago, bastion of unfettered inquiry. Trappings of such an institution, related to the American ethos included a faculty addressed as Mr, none of the German Herr Doktor, replete with the mysticism of anointed superiority and Valhalla remove, the insouciant and irreverent students, indicative of same, breath of fresh air. In dress and manner Stan affected American lack of affectation, casual guise. On a short road trip to Cornell, he acquired a kind of fishing hat to which he became immediately attached, so befitting the American intellectual, serenely trawling scholarly waters, only to have it lifted away by the wind as we over the speed limit hurtled back to Rochester, top down in the Ford convertible.

That said Stan, with his unrelieved insight, acutely understood, was unstintingly appreciative of, other cultures, brought home to me when a busload of French students, shepherded by an older male teacher, arrived on the Rochester campus, taking residence in one of the summer-empty dorms. Smitten with the

unearthly vision that was one of the female students, I was bemoaning to Stan her unattainability when he suggested that I simply approach the male teacher in charge and say I was interested in one of his female charges. His point was that because the man was French, this was a very straightforward matter and he would, being French, arrange for me to take her away for the day. This I did, utterly surprised that the scenario played out precisely as Stan had said it would.

Fortuitously a day had been previously planned out with the Eberlein's to a nature park a few hours drive away complete with long well-tended forest walks, open air restaurants and pool. Too young to know what I was doing, the day passed reasonably well, the girl maintaining a proper French cool. During one of the walks, Stan was engrossed in conversation with Eberlein's wife, a vivacious woman, engagingly vibrant and brimming of curiosity, a source of wonder that she was married to Eberlein. Again I was astonished, the topic was the gospels of the New Testament, Stan effervescent in a dazzling display of ecclesiastical

erudition, Eberlein's wife matching him step for step in his discerning argument. All of us arranged later by the pool, Stan perhaps recalling earlier days, did manage a cautious dive off the low board, intense and careful as he swayed forward. (I made no further progress with the femme fatale as, a few days later, perhaps breaking some French protocol, I knocked on her dorm door, only for her to open it, utter one word, and close it again. Me in uncomprehending confusion, I later learned she had called me a 'camel', apparently the height of insult in French.)

Stan's course that fall semester was Number Theory for which he used as text Andre Weil's set of notes for his beginning course in algebra at the U of Chicago when Stan was there, about 30 pages. (Springer Verlag eventually published these notes as 'Number Theory for Beginners', still in print.) The usual Stan free-form, there were no exams, assignments, grades (A or B) dependent on you showing SOMETHING, a notebook would do, indicating you made a bit of an effort at learning the notes …. Class lectures were always surprising in content, non-contiguous ….. but

….. extraordinarily, absorbingly interesting, worth the price of admission. By this time Stan was regularly missing the lectures, spending considerable time I think at the Institute For Advanced Study. Sandy Segal was tapped to take over the lectures for a time, non-plussed by the (apparent) lack of conventional organization which confronted him, unfortunate in his choice of pejorative comments upon same, which I ('solid citizen' Stan later characterized it) of course felt compelled to redress.

Stan's house in Rochester was a way station for itinerants trekking from Harvard to Chicago, Cal Tech to MIT, Yale to Stanford. Mathematicians, philosophers, physicists, the home was rarely without guest, invariably interesting, me a silent but constant presence, understanding little but glued to the vigorous conversations. Generally at the top of their game, these were contributors at the expanding edges of knowledge, many of whom I came across in references in graduate school many years later, little knowing at the time their substantial achievements and prominence in the work they were doing, to me just really interesting people. John Myhill was a

frequent visitor, playing the piano alone for hours on end, improvising, making it up as he went along.

Later in the fall Stan and Carol threw a huge Thanksgiving party, invitations to people all over the USA, most of whom pitched up including 'the smartest man in the world' as announced by Stan in a Number Theory lecture, from Chicago, a guy who finally did arrive by car after Stan was certain he wouldn't make it, most probably sitting in an airport lounge, late for the flight, trying to figure out his next move. True to form, Stan mentioned to me later the fatal flaw, that even though of incomparable brilliance, should he not be able to solve something immediately, he left it aside. (Bill Howard, who didn't make it to the party through an amusing mishap, thinks this was probably Jack Towber of whom Paul Cohen used to say: "Towber is the only person I have ever met who is smarter then I am.") Ever sensitive, Stan ensured the presence of all of the younger mathematicians in the department and those visiting from other countries, Stan caring in particular for the young man from South Korea. The house was overflowing with guests staying

the night(s), every bed and couch, the overspill finding refuge in nearby hotels …… the din at high decibels, the party lasted days (and nights), no one slept, the intellectual excitement tangible ….. I tried to keep up, understood about 10% of what was said, kept drifting off as the hours padded by, would snap awake only to find myself in the same conversation, only moved further along. In a state of elation, irrepressible and unrestrained, Stan initiated proceedings with 'I've been quiet for all these years, now it's my turn to talk!' ….. really?? ..... what could that mean?? …. with my experience of him, an image of Stan not talking produced immediate cognitive dissonance.

The most important thing in Stan's life was his family, Carol, Jonathan, Sue, Peter, the bonds of tungsten steel. With deeply conservative ideation, the cohesiveness and integrity of the family was uppermost. Stan took pride in bringing home the bacon, under no circumstance would he council the thought of Carol working. He greatly loved his home life, loved being with the family, and (though he once commented that he wasn't terribly interested in the kids until they

could talk) was intimately involved with all of the children, ever watchful of their development, ever sensitive to the ebb and flow of their daily undertakings. His feeling was equally returned, unwavering love, loyalty, devotion.

With its relaxed air, sense of freedom, it was always a pleasure to be around the house. I was subsumed into that life, readily accepted, partook of all aspects, meals, activities. Sunday mornings were a case in point. Late morning I would be sent to the local deli to commandeer a largesse of bagels, cream cheese, pickles, pastrami, tongue, salmon, rye and whatever else. This would be centered on one of the mattresses upstairs (always casual, there were no beds in the house, mattresses alone …… I had arranged mine so, thinking it was the height of romantic bohemia, before I was aware that this was the drill throughout the house) at which point the family would gather on the mattress, while Stan held forth, ever engaging, all contributing (and listened to), roiling, impassioned, involved conversation, a smorgasbord of topics surfacing , vying to be heard.

An exhilarating splurge enabled by the stipend accorded a U of R professor, Stan came home one day with a brash, sexy Ford Fairlane 500, convertible, black with red trim (I'm sure Carol could only see even more parking tickets in the offing.) The observant social critic in action, he commented on the aggrieved looks of envy he drew driving it around. At Stan's level of abstraction, a car was not a cherished possession, not an ego investment, it was a thing to be used, hence when he was not using it then of course I could …… many were the happy hours spent on clear, frozen Rochester nights, 2:00am, top-down in the knee-deep snow blanketing the completely empty parking lot of a nearby mall, racing, sliding, fish-tailing, braking, Disney's hippo on skates sans the finesse.

With his savage contempt for what passed for 'education' and his inviolate stance as to the damage it could do, Stan, the protective father, vigilant sentinel, closely monitored his children's progress through the schools. Jonathan, 15 at the time, quiet, solemn, the obverse to Stan in personality, had become woefully disaffected with high school a year or two before, at

which point Stan permitted him to leave high school, arranging for him to take university courses, normally two math courses and one language course each semester. Stan not at all 'teaching' him, but simply providing the environment, Jonathan thrived, worked exceedingly hard, and, not burdened with excessive course load, 'really' learned his subjects. That Stan's notions regarding education were solid was rather dramatically demonstrated when Jonathan, certainly a smart kid but not outside a normal group of math grad students (his IQ tests ran from 135 to 150), at the age of 18 scored the highest on the entrance exams for the new math grad students at Cornell.

Peter, cherubic rapscallion, 10 years old in the 5th grade, was in personality much more in the mold of his father, rabidly competitive, a tightly wound bundle of ceaselessly uncontainable and irrepressible energy. Peter was a singular pleasure to be big brother to, many were the outings we had, sometimes with his little horde of friends, to the park to test the home-made rockets, down to the ping pong club, a bit of softball, teaching him on the front lawn how to box, at

times a bit out of control in the old car, me the pilot, they the bombardiers, bomb bays open, posting ½ eaten ice cream cones into the oncoming cars, peeling around the corners, evasive tactics in play. And always for light relief feeding him mathematical puzzles and games, delighted in his rapid inventiveness. Peter of course had zero problems getting the school stuff (acutely empathetic, he always felt bad for the kid racing him in an arithmetic problem at the blackboard) but Stan noticed his increasingly unhappy disposition as the year unfolded and, after a talk, pulled him out of school to stay at home. So freed, he launched into a number of projects, the major one an exceedingly complicated race track for little Indy 500 cars filling (3-dimensionally) the whole of the living room, gradually gaining hegemony over the contiguous areas. (Stan, in wonder, said that (even) Jonathan had done nothing like that.) Peter's unscheduled school holiday (which did him no harm at all) came to an untimely end when Carol, concerned mother, put her foot squarely down, never at ease with her children becoming 'Exhibit A' and 'Exhibit B' with respect to Stan's thoughts regarding education.

Sue never really had the contretemps with the school system the boys had, a light hearted, sweet spirit content with her flute, duets floating through the house when my younger sister Marit visited, her flute in hand.

As we eased into the spring semester, Stan was spending more and more time at the Institute For Advanced Study (unofficially), away from Rochester much of the time. Although I really never thought that Stan was not at any time fully in control, blinded perhaps by idolatry and the belief that his rational powers at all times obtained, it was noticeable that, in highly conventional manic-depressive terms, he was on an upswing that was gradually but inexorably gathering steam. Others noticed it, Eleanor his graduate student worriedly commented. Sleep was becoming impossible, restless energy out of nowhere, rage at the way things were (in the educational systems) and all those that aided and abetted the status quo, and the variance with how things could be.

Fulminating with plans and visions, the correctives, the solutions.

On a minor note there was Hans Bethe 75th birthday, Bethe then at Cornell. As a measure of respect Stan (out of whole cloth) envisioned a great celebration to be held at the U of Rochester, home to one of the if not the best physics departments nationally. To be held over a number of days, physicists, mathematicians, particularly his friends and colleagues would come in his honor, there would be talks, seminars, tributes, and evenings out. There was the small matter of who could and would pull this together. Stan, already overextended, necessarily defaulted responsibility to the math department, this very much like a major leaguer handing a baseball instruction book to a little leaguer saying, 'OK, read this and then sub for my position'. Total shambles of course but events too far along to back out, invitations already sent including to Bethe. The 'celebration' hopelessly degenerated into a pathetic showing, Bethe arriving to give the only seminar, no one though apparently the wiser as to what the event could have been.

On a major note however, it was Stan's dream that he would create a 'true' university, a U of Chicago but without the Achilles' heel. For Stan, a goodly way along the upswing curve, the U of Rochester was ripe for the pickings, the campus was there, the faculty was not there but would be attracted as had happened at Chicago, the money was there, a phoenix could rise on the ashes of a terminally flawed institution. Very actively (though unilaterally), Stan began putting his plans into action, talking it up with various departments, the administration, soliciting their support, putting himself of course on a collision course with the (substantial) entrenched interests, notably the president at the time, W Allen Wallis, a student in the dept of statistics at U of Chicago when Stan was there, one for whom Stan had nothing but disdain. The juggernaut rolled, only the details of collision left to be determined. These occurred at a faculty meeting with the president, I don't know the agenda. As reported by Anil Nerode, Stan listened, became upset, walked to the front, and spit on the president's shoes

…. He walked out. He then resigned his fully tenured position.

The theme of Stan leaving a group, resigning a position is a recurring one. It occurred again a few years later when shortly after being given a position (of some nature) at the Institute For Advanced Study, where he had been unofficially for some time, 'hanging around' in Halmos' phrase, sleeping in friends' offices or on their couches, for years, he simply resigned. Though this was always explained as a matter of principles, it seemed to me ultimately more deeply part of the constellation of neuroses, this one that he simply could not belong to any group whatever, that he fundamentally had to be totally, completely independent and alone, he could not tolerate being typed, branded, categorized, implicated that association with a group would imply, nor could he have any obligation to, stated or implied, a group, his independence and intellectual honesty under threat and possibly impugned. I think his not getting the PhD related to this, but that perhaps more to do with being under the thumb of, controlled by a committee,

not by that time granting anyone the authority or dominion to sit in judgment of him. This I think is what made the family so vitally important to him, his one lifeline to an intimate group to which he could belong.

Second semester, sophomore year drew to a close as did my sojourn with the Tennenbaum family, I left for Albuquerque for a summer which turned out to be summer and first semester junior year ….. thereafter I saw Stan reasonably frequently when I got back, particularly in his Set Theory class …… he was mostly away from Rochester, much time with Myhill in Buffalo, same at the Institute For Advanced Study, often with Godel. Jonathan had left for Cornell but I visited Carol, Sue, and Peter, especially senior year when I was living off campus near the home they had relocated to.

SPRING 1967 – SPRING 1971

Following my departure, Carol, caught in the turbulence of the contrails trailing Stan's meteoric upswing, grew fearful and agitated for the well being, indeed the feeding of, her children. Stan's theatrical exit from the Rochester tenured position together with what looked to be endlessly mounting frenetic activity towards what also looked to be hopelessly unrealistic dreams and visions, had sorely rocked her normally equable and tranquil equilibrium. At the least she wanted to work to establish some semblance of fiscal security, a position open to her at the U of Rochester computer center (where she became such a loved figure that it is now named after her), Stan wouldn't hear of it. Seeking advice, she was encouraged to have Stan committed (in New York state, spouses could do this). Of course nothing was more frightening to Stan with the exception of the loss of his children, his next hurdle, when Carol, at odds with his intractability, pressed for divorce. Stan, consumed with possibility he might lose access to his children (the children for their part were staunchly loyal to him), hired one of

the top divorce attorneys (whom he personally knew of course) using what I think was IBM money given to him for a research project. The attorney assured Stan that at some point Carol and her attorney would make a certain mistake, very specific, which indeed did happen, Stan's greatest fears then unrealized, achieving either custody or joint custody. In any case when the smoke had cleared, reality intervened and Stan and Carol rather harmoniously and peaceably arranged living matters for the children and their own articulation thereof. For the most part Peter and Sue lived with Carol, Stan occasionally dropping in though he did have at least Peter for a summer out in California where he had followed Jonathan out to UCSD, as he put it to me, a case of the father following the son. (Stan was extraordinarily attached to Jonathan, could little bear to be without him for too long.)

Sometime after this Stan launched what would be his final attempt to establish a new world U of Chicago, this time though he had cracked the nut as to funding, leaving the institution completely independent of

outside sources and therefore influence, a ‘city on a hill’ in its purest form. He would build a new university from the ground up, not an existing one to be transformed, it would generate its money through the development and sale of educational materials, all departments involved, pedagogy of the highest order.

To attract the funding to begin, the seed money to get things off the ground, buildings acquired or built, faculty on board, etc, Stan installed himself in the St Regis hotel in NYC using money borrowed from friends under the belief that to convince people with money you necessarily had to appear wealthy yourself. No fool he, a master of guile, persuasion, and manipulation, all justified by the purity of motives (and though I might expressly it lightly, I do second this, having only admiration for how lofty his dreams and the creative brilliance towards their realization). Stan then set about interesting some of Wall Street’s most successful financiers (among which, reputedly, the model for Gordon Gekko, the Michael Douglas character, in Oliver Stone’s film ‘Wall Street’). Part of the persuasion, Stan produced as an example of the

educational products he had in mind a film of him 'teaching' two boys, sons of the financiers, very bright, something about mathematics through presenting them with a quite visual puzzle, expertly edging them towards a solution as they struggled with it. I'm not sure where the money came from for this, perhaps the loan, perhaps Xerox, probably not from the financiers, it not being good form to solicit money from those you're trying to convince. Apparently Stan's push nearly succeeded, the Gordon Gekko figure teed up as principal investor, but failed at the 11th hour. (The film Stan made, which I saw when Stan brought it through Rochester, is now lost, an inestimable tragedy in my view.)

Giving it rather short shrift so to speak, Stan rarely had any money to speak of, it of little concern, certainly not something of value in and of itself, certainly not to be sought or pursued, husbanded or cached, certainly not to be idolized or revered, not the tablets brought down from the mountain. It had no purchase on the jagged crags and rugged cliffs of edifice truth. It was a mere commodity (remember the car?) to be shuffled around

as needed. It came (rarely) and went (often), usually just enough around to make the wheels of his life (family first) go. Often enough, when it was there, it was parceled out to others not at the moment as flush, particularly raggedy students, three breaths away from famished collapse. On the other hand, he kept a running tab on what he thought he was worth, competitively aggrieved that his chosen life did not guarantee this estimate to be indeed in place, no additional effort on his part. I think he was slightly mystified, slightly frustrated that for one so prolific of imaginative ideas, many of them of solid commercial potential (he spent an afternoon at the U of Chicago with a friend working out the details of fully automating the creaky archaic library) the existence of his vision producing spinning wheel did not automatically spin gold. Once at the Institute For Advanced Study, at my prompting, he said his current worth depended on how you looked at it, that he at the moment owed X (not a large sum) but with the imminent realization of certain plans, he was worth Y millions (a very large sum). He smiled when, with some irony, I demurred to accept a final valuation of (X+Y)/2.

So it was in the Spring of 1970, I, having left Rochester a year before, was now teaching at the Waccamaw Academy, a private school in southern North Carolina, a town called Whiteville (catch the name), recently set up by the community stalwarts Jesse and Gaye Fisher to provide some semblance of an education for the children of the region, some bussed daily from 30 miles away. A phone call in the afternoon, Stan's voice immediately, no preliminaries or pleasantries, 'Tully, what are you worth?'. Saving for a first European trip for the following year, I had a little cash on hand. Mulling this over, we jointly determined there was a total of $500.00 (actual money in those days) not in play, which sum was in short order in electronic transit to Stan, commodity, mere commodity. (Peter much later mentioned it was this that fed him and Sue for the summer.)

A year passed, Spring 1971. Sitting in my tin can trailer slowly barbecuing in the North Carolina sun, all doors open, I was dreamily plotting my course up the east coast to Boston where I would catch the cut-rate

flight to Luxembourgh, starting point of the random walk about Europe planned for the next 3 months, when I began wondering where Stan was, potentially anywhere (no fixed abode then) but most probably in North America. That certainly narrowed it down. Bringing to bear all the A→B lessons learned at Stan's intellectual knee, second nature to me by then, I thought the best bet, better than trawling through every single city Yellow Pages in the nation, was to think of someone Stan was regularly in touch with, people who tended to have fixed abodes, and get hold of them, they perhaps having news of his whereabouts. First up was Kurt Godel who as permanent member of the Institute For Advanced Study was rather fixedly there. A call to the Institute, I was patched through to his home, he answered and very graciously advised (me a total stranger) that Stan was, lo and behold, there, staying with an English mathematician, one most unfortunately in a wheelchair, a Tony Baker (I think). Bingo ! (Stan a few days later found it very interesting that Godel spoke to me as at the time he was well-advanced in his mental aberrations and was not speaking to anyone …. at all.) Hitch-hiking up the

coast, I called Stan from a turnpike phone box, let him know I would be dropping in later that evening.

The director of the Institute at the time was Carl Kaysen, following Oppenheimer, bent on bringing the social 'sciences' to the Institute, heretofore nearly exclusively mathematics and physics, in any case weighted to real sciences. Relying on the petty divisiveness of the less than emotionally mature and psychologically astute scientists, characteristic of this group in general, Kaysen was running an adroit divide and conquer campaign, Stan, vehemently opposed, running a one-man counter campaign, an underground (though blatant) guerilla action, collaring all who would listen.

The following day, in recounting my life since leaving Rochester, I ran through my experience at the Anderson School-on-the-Hudson two summers previous, a private school north of Poughkeepsie on the Hudson River set up two generations previous by Victor Anderson, a psychiatrist, to house and care for

neurotic teenagers, psychologically damaged products of disadvantaged, if only mentally, circumstance. It had now degenerated into a holding facility for the children of rich parents looking for someplace to stash them, get them out of the way but avoiding the guilt of so doing with the rationale that they were in a nurturing environment of estimable quality ….. Ha! …. Though I was to be the math teacher the following fall, I was, immediately a subversive force undermining the restrictive, repressive, penal nature of the school, a marked man, hardly lasting my summer tenure as supervisor of the boy's dorm. My story fit well with Stan's burgeoning encyclopedia charting the degenerate state of American education. Stan taken with my description of the school's administration (mostly descendants of the good Dr Anderson) as a once vibrant, healthily rooted and psychologically-principled tree now withered, always cooking on all cylinders, flexible, adaptable in nudging forwards his multiple agendas, we spent the goodly part of the day traipsing around the Institute visiting various members, inclusive of Deane Montgomery and Hassler Whitney (I think), Stan trotting me out for what was now my party piece by way of more indication to them

the advanced state of rot endemic in the educational institutions. Afternoon tea at the Institute was not without color, Kaysen briefly flitting in, he carefully semi-circling Stan, any encounter with whom would certainly put him off his biscuits.

So passed another incomparably absorbing day with Stan, unceasing conversation running the gamut of mutual interests, numbers of amusing, telling vignettes many of which I've already relayed to you, many memorable encounters with the permanent and visiting members, the whole of the day cut glass etched into my memory, frictionless ease to put myself there as if still living those hours, intensely alive to Stan's unquenchable, riveting, luminescent, potent, ardent being. The diversion to the Institute crimped my time to Boston, a short flight was in order. Stan drove me out to the airport in an old car, the hotshot Fairlane Ford 500 long gone …… it was early evening when we pulled up to departures. I turned to look at him, searching for some words of good-bye, not finding them ….. he also turned, paused for a moment

and then simply said, ‘We’ll see each other again’ ……. We never did.

POSTSCRIPT

Although I did not know it at the time, I met Stan at the apex of his life's arc, he a lion in summer, magnificent in power and maturity. I had no knowledge of him after our parting in Princeton in 1971. When I tried to reach him in 2007 it was too late. This I will regret for the rest of my life …… a life in which he lives within me ….. he always will.

Rob Tully

03 November 2014