GAPS AND VERGES

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ONE

EVOLUTION

I had written three pages on how insects are such good chemists, citing the silkworm sex attractant, and the bombardier beetle, spraying out hot hydrogen peroxide when threatened. And I was in the middle of telling the story of the western pine beetle, which has an aggregation pheromone calling all comers (of that species). The pheromone has three components: one from the male, frontalin, exo-brevicomin wafted by the female and (ingenious) abundant pitch-smelling myrcene from the host pine. I had written this the night before, broken it down into short lines. When I woke up Sunday and sat down to work, quietly, with a second cup of coffee, the sun was on my desk. I had some flowers I had picked on the hill in a vase: bush lupine, California poppies, and some of the grass that grows here. On the grass stalks the bracts were a few centimeters apart. They were beige, finely lined husks, their line set by a dark spikelet, more like a stiffened flagellum than a thorn. A hint of something feathered inside. The sun's warmth had burst some of the pods, which had fallen on the draft (the words were lost in the sun), fallen by chance next to the shadows of seed still hanging, and, the grass seed like dormant grasshoppers, legs of now bent spikelets cast second, finer shadows. Then I saw you walking on the hill.

INTUITION

The red-haired woman said glass is tense. She didn't know about disordered silica chains, rings and structural frustration. She just looked at its fractured green edge.

INTRAVENOUS

It

itself not wet, the white redbud's broad leaf offers strong rain halt, a bounce, an inclined run, mingling of little waters, birthing droplets at this near perfect heart's edges. Tiny burdens, a memory of Christmas tree globes, can't be borne indefinitely. A great, green heart, freed, jumps, showing its gray bottom, startling droplets still left, into fall, off, to the puddle where the tree trunk sinks, where the heart of the tree drinks.

HITCHHIKING

I counted thirty-eight red, yellow and green helium balloons

someone had tied to a string. The string was bound to a stake:

the balloons whipped around, the free end again and again

forgetting the tether. I went to the stake and lay with my head

next to it, so that I could sight along the fluttering line. That

way the sky shrunk. The balloons hid one another, so I couldn't

count them again, but I saw the one at the end was green. I pulled

the string back to feel the lifting force. The sky burned blue.

I pumped the line to see if wave motion could be set up, if

it could be concentrated so that the snap at the end could set one free.

HUMAN, ALL-TOO-HUMAN

they are, those fuzzy little balls curled into the right fork in the gum. Nearer, resolving into black eye patches, leathery nose, a hanging loose of arms to scratch the way we just a know a teddy bear or Pooh does scratch. Even the pouch is sewed on backwards. So comfy a hug, a fit.

Cousin Leo, whose mother died young, once held a nurse. Oh, she looks so good in white, he said, my Magyar Florence Nightingale. He didn't let her change her clothes at night. The nurse grew tired of Leo (who wasn't much good at earning a living in Szeged or Australia) and because it was not a time for divorce, she gave him hell after dark, beat the kids.

So you can't tell about koalas either. Sweetness and light, fluffy ears? Up close, there are scars to show that strong clawing is what makes this niche fit. The young are weaned on a thin eucalypt soup lapped off the mother's anus; even before, blind, grub-like, many don't make the unaided climb to that cute pouch.

SVOLOCH

This one's for you, sallow third man in the row of Customs officials at Sheremetovo. Marina Tsvetaeva, in Paris,

would have loved the quiet voice in which you pointed out that some of her twenties' poems in this four-volume

New York edition were disrespectful to Soviet authority. To you, she would have thrown a quizzical smile from

under her bangs, and with a stylish wave of her hand, she would have said "Oh well — it's good, my friend, to see

someone reads my verses." After all, you know so much more about Russian literature than the freckled young

soldier, the first line of protection of the Soviet borders, who having spotted one Russian book in my suitcase, called

for his still uniformed but beefier superior, who in turn found (not that they were hidden) three novels by Aksyonov.

But for you, the expert in a gray suit, authority, it was left to take Tsvetaeva, two slim volumes of Joseph Brodsky, and,

68 years after the Great October Revolution, in the consummate act of defense of the motherland, to confiscate

the cassette of the Haydn Cello concertos, played by Mstislav Rostropovich, such sweet subversion.

SOME MORNINGS EVERYTHING GOES RIGHT

Stepping out of the bathroom I toss the opened Klee's Pedagogical Sketchbook I was reading to my bed. So that I can wash my hands. Usually my aim is bad. But here is action: the book flips, closing, opening, this yellow squarish bat, like Larry Bird's 3-pointer, long in flying, like a solid, closing to a plane, to a line at one point in its trajectory, trading momentum, compactifying to a perfect landing, title up on my unmade bed's pillow.

REAL

for Olof Lagercrantz

Seamounts just below the surface, they seem to be. One night you were swimming with strong strokes and they cut you, the salt stung but you kept on, not wanting to show you were afraid of what's under water.

Asking quietly around, you find their presence doubted. No one else has seen them, they say, it's just a deep sea, no angelfish or coral, so deep.

You return in the early morning hours when you can't sleep, you're alone and you swim around, try to define them without touching. You remember how they cut; you think you know where they are.

You come back again, carrying sacks of words (which is all you have), build cofferdams and caissons, encapsulating what's down there; it will be revealed. Words tumble into place, pleasuring others. Here they build a papier-mâché mold, there, the construction is airy-strong and supple like a spider's framework silk. Words craft textures round the shapes underneath: you hear their sense

in the worlds in your mind.

One day it is time the others see. So you bring them by, tell them of the wine-dark sea and what cuts underneath — you show them the sluices, the storm you've diverted into a glass box.

It's a success, a good party. One likes the sheen of the silk curtain, another admires the caisson airlock and wants to license it. Someone remembers how he also was afraid of swimming in the dark, how he once brushed against an eel.

They laugh and cry. Some even stay to see you break the gates, strip the curtains, open all the structures to see nothing there — the sea as it was as it will be - the sea and around you the words rise, only words, entwined, composing a trellis on an ark, gulls diving for jellyfish.

TWO

JUNE 1944

1

The woman leads her brothers across a ditch. They lean on her, their muscles too weak for walking after fifteen months hiding in an attic.

Rain mired the Russian tanks near Berezhany, and the Ukrainian who hid them said they must walk, across the soaked fields of early summer,

away from the house, the attic. German troops were still in the village, and neighbors said they smelled Jews hiding. So one night

they bound rags around their shoes and set out toward the Russian lines. The woman was tired, but when the boy, six, couldn't walk

(did he cry?) she lifted him on her back. The wind was new to the boy. In the attic one brick, end-on, was out of the wall. He watched children

play outside through this rectangular mask. The children looked flat, and had a habit of jumping out of view. Their giggles bounced in, but no wind,

for the brick hole was small. Parts of the attic the boy wasn't allowed to be in (the boards might creak). Dried peas in a sack made a good pillow.

So it was right for the boy to reach to the wind to hug it, but the big guns then took the wind from him, his mother stumbled, he had to grab

her coat. The hedge swung off up the hill, and

they had to cross the field, the brother who had been with the partisans said. He had the gun

with four bullets (but there were five of them.) So they moved slowly, feet sinking into clay, exposed, as they were, to the road, dawn, to the Russian lines.

2

Tanks (thank God for the red star) rutted the road, made them jump back. We are Jews, they called up to the trucks, we want to go to Zloczow. One stopped, Russian soldiers

climbed slowly over the side, some wrapped in blankets, smelling of vodka and cabbage. They gave the men handrolled cigarettes, the boy a hard candy. One said to his mother

in Yiddish, I'm from Odessa, and pulling out a worn book, look, I have my Peretz with me. The soldiers hugged themselves, coats flapping, pissed by the road and told them they

could climb up and ride as far as they went. The others slept, but the boy looked over the side of the truck as it lurched around craters, stopping to let tanks pass. He saw a leg

in a ditch, then a body crooked in the way of dead things, and he thought: that must be a German. He saw trucks with Katyushas, crews cleaning the tube racks, stacking shells. He imagined

them fired at night. Another body, two arms, a helmet. No blood in this mud, just soldiers cursing a flat tire in Russian under gray skies. His mother called him and he came.

3

The Russian truck left them five kilometers from the town. They bought some milk, bread, kielbasa from a farmer who gave them a look, but took the gold

coin. The boy swallowed the milk, didn't like it, he had not drunk any for three years. They slept in a barn, walked into town the next morning. A Polish woman

sweeping her gateway recognized them. She frowned Ah the Rosen family, so they didn't kill you all. Their house was standing, the biggest

house on Jagiellonska. Only the roof was shot up. When they knocked, a man came to the door: We live here we thought you . . . wouldn't be back. The furniture

was gone, but the stamped enameled tile ovens stood in the corner of each room. In the attic they looked for the pictures they had hidden. The boy found his mother

crying, baby pictures (is that me, is that me?) around her. Photos of a man pushing a baby carriage in a sunny park, a man holding hands with his mother.

BELIEVING

When I was eight I was a Catholic for a while. 1946, Kraków, it was time to start school, and only

the parochial ones were working. So my parents said we had converted during the war. That got me in.

My best grades were in Catechism. I wasn't Catholic, but I wasn't sure what I was. In church I

carried a censer and had my first communion in white shorts. The priest taught us to swallow the Host. You

weren't supposed to chew it, even if it felt as if you would gag. The sisters gave us colored pictures

of saints if we did well in class. I remember confession, boys shoving to get the soft priest. Sometimes

you didn't know who was in the confessional. You had to sift your sins; the priest wanted not just

a lie, but something like stealing a soccer ball or looking at your mother in the bath. He would ask:

How many times? Then you could get away with a scolding and three quickly said Hail Mary's. You wouldn't want

to confess really dark things, like looking with the janitor's son at his younger sister's sex, poking

her with a fork. The priest would be angry, and who knows what the gilded black woman on the altar, the one I didn't believe in, but who looked at me as I walked in my white robe behind the priest, who knows what she might do.

TWO FATHERS

I suppose my stepfather was a good man. It's not that I didn't like him, he just wasn't my father, who was a hero. I don't really remember my father. In photographs there is a man pushing a baby carriage,

a man holding up a laughing child dressed up in a Carpathian costume. I heard stories from my mother of how he was hazed as a Jew at Lwów Polytechnic, I've seen him in Zionist youth group photos

with my mother. I read the notes he made in the camp on a book on relativity theory, and I've heard (again from my mother) how they went to Brody, his first job as a civil engineer being to build

a cobblestoned street there, and how they stayed in the house of the local priest. My mother sometimes told these stories with my stepfather there. The war came, we were in a ghetto, a labor camp, then toward

the end my mother and I were hidden by a Ukrainian school teacher. My father was killed in an attempt to organize a mass breakout from the camp. I was five when the news came to us in the Ukrainian's attic,

and I cried, because my mother cried. That's when my father became a hero, which he was. The war ended, 80 of 12,000 Jews in our town survived. In Kraków, where we went in 1945, my mother met

my stepfather, who had lost his wife in the war, and they married. I was eight, and though my stepfather tried and took me on carousels, I didn't want him. Later I built up a theory that my mother remarried

to provide me with a father, not because she liked him. But friends who knew them say they were in love. In the US my stepfather didn't try — he was busy working, first in a luncheonette on Delancey St.,

and when that failed, as a bookkeeper. When he was angry he raved in his room, then sulked long. We never made up in our family. Any punishment

(I was too good a child for that) was left to my mother.

My father was talked about all the time, and that is how my sister, born in Queens, found out she and I had different fathers. When my stepfather and I had a fight about my getting married

to a girl who wasn't Jewish (I think he was hurt by this more than my mother) I told him he wasn't my father. He died in 1981, and when I get angry I see that I sulk like him.

THREE

JERRY-BUILT FOREVER

1

We think that all that matters can't be deep, but chunk-toknowledge-chunk in subsurface veins, and we, mind-armed miners

search/dance to lift earth cover, free the plan. The world, oh it waits patiently to be known, and we do know much: what

the bombardier beetle sprays; the salts, silts and organics, the gradients in the Azov sea; far bangs and dodges

of light in space; how vitamin B₁₂ twists one pyrrole ring as it is made. Terra incognita shrunk to the way the birch

bark peels and why he dressed in white the night he sealed the garage door cracks and turned on the engine...

2

This biconcave bialy platelet of the erythrocyte, the red heart of the blood, holds the oxygen carrier, hemoglobin. Four coiled

polypeptide chains, four subunits changing pairwise twice in the fetus to let it soak up placental O₂ steadily. Each chain a globular

protein, juxtaposed twining of helical segments, predestined kinks, sequences of amino acids alike in sperm whale and horse,

a meander of bonds around the flat disc that colors all...heme. the active site, the oxygen binding site, a porphyrin, iron. Oxygen,

enflamer, winds to a pocket molded by protein, binds iron, moves it in consummation, chains tethering heme tense - a far

subunit feels the first heme's bond quiver, the chains pull, O_2 binds easier. Cooperativity, an allosteric protein. In 1937

not long before the war, Felix Haurowitz watched crystals of deoxyhemoglobin shatter on oxygenation.

3

Beauty whirls rococo in fussy chains round the oxygen pocket; beauty cambers simple - the iron

hub of heme. If God's plan for all this function be heresy, at least let what came, chanced, to be

be best. Heme, myo- and hemoglobins, vertebrates O₂ transport proteins, subunits' trim fit link - evolved.

4

Carried by blood, carrying electrons, life-empowering

oxygen. Elsewhere, in engines it's sucked into carburetor

trains, there to mix with branched heptanes, octanes, another kind of feedstock. Sparked, it burns things in controlled explosions,

a human specialty. And what thermochemistry says should end in greening CO₂ and steam, in incomplete combustion partly

goes to CO, carbon monoxide. This odorless diatomic tresspasser sweeps into bronchia, brashly binding 200 times better

than O₂. A free ride on deoxyhemoglobin down arteries, right past cells that long for the other, can't wait too long before shutdown.

5

So a life ends. That wise blood, a million years in the making, it should have fought, that oxygenstarved blood. But Nature's

a tinkerer, a shanty-town contractor, filer of mis-fit gears, the original found artist. In oxygenated salty soups, lightning-lit, when

molecules swam to be shaped, and vines groped for the sun, she took anything that worked, or the first that passed the million destructions

of her sweet time lab. No whitecoated intelligences to hurry her or remind her of the carbon monoxide that was not there.

STRETCH MARKS

1

It is said in the Talmud that the child in the womb, flexing her floating sac of the world, knows all, knows the name of the angel who wrestled with Jacob, knows

and dreams, dreams all molecules her hands will make, bowties of atoms centered by platinum, carboxypeptidase. She remembers the constellations' pause as Abraham

held the knife over Isaac, and later, Dachau trains. Reaching, through her mother's eyes, she blows life into weeds and carbon chains from comets' tails;

and marks the lust, just that, of her father in her conception. In volutes of gene threads and shells, what a time to know! And then . . . a time to be born.

As she is pushed into the colder world, an angel strikes her on the head, and makes her forget all she knew inside. The mark of the angel is on our lip.

2

Why does the angel do this? Today they don't announce themselves, these wheels of God, and, if questioned, they say: I'm just following orders. Is he Ialdabaoth,

the workman demiurge, who without a host of technicians and genetic engineering knew, just knew, how to mold muscle, sheathe a nerve, the nitty-gritty, bone fitting

into bone, of creation? No one's left to believe in him. So Ialdabaoth, unemployed by this sexy human trick of procreation, strikes out at children. Or maybe

it's Yahweh, not my Hebrew one Lord, but his dark Gnostic mask. He keeps men from unhusking the fallen sparks within, knowing the blue sky that is also the sea of their spirit.

(continued, with stanza break)

3

Rabbi Baruch of Mezbizh explained it thus: If the child were not made to forget, she would brood on her death, the count of years and seconds left

audible like a repeater of death in her mind. Contemplating her death she would not light candles, or build a house. So the angel makes her forget.

4

But I think God, who knows, doubts (which is to know) his design works. His winged observer marks the onset of contractions, hydraulics of the amniotic

fluid. The angel is drawn into timing, hears breathing, hoarser, instructed. He touches, an angel's touch, the dilating neck of the womb. The child's

head is pushed against her own breast, the occiput leads, rotates into the pelvic floor until bones won't give, forcing the head to turn, shaping

a conformation that angles up; all this takes time even if it is not a first birth. As the head emerges, a thin shoulder slides into the place of resistance;

more pain, a push turning the face into the mother's thigh. Confronted with this congruence of form and motion, the angel is the one struck dumb, forgets, must attend

every birth. The mother stirs, unprompted, to the afterbirth; the daughter, like a seal coming up from its deep dive, depressurizes, gasps for this unforgettable air.

FOUR

IF I FORGET YOU JERUSALEM

then let the gold one sun sets on all old stone be stripped. If I let the memory of your hills

erode, how would I raise Granada? Your minarets, Al-Quds, fly me to storks' nests on blue tile, high

above Bukhara. Friend of an old city, if I miss the babble at your gates how will I name the accents of New

York? Dear city, were I to lose sight of you in snow, would I know Nara, all towns lightly dusted by snow?

And, if I forget the candelabrum on Titus' Arch, if I let fade the jostle of graves down the Mount

of Olives, Yerushalaim, then let me forget Mycenae, and Nagasaki, and Warszawa in forty-three and four.

But if I remember? Oh, I do remember! Then, with the good news of the earth, the water of spring Gihon, I slip

twelve-hundred cubits down Hezekiah's curving tunnel, into the pool of Siloam. Cypress roots reach for this sweet

instruction issuing from Zion. But I, I grow cold, for I remember more: The terraced escarpment of David's

city, like the prow of a beached ark of God, blocks the pool from seeing (but it also remembers, it was there)

the ruined temple. What ruin? Not

a stone, not a stone upon stone . . . Elsewhere, archaeologists sift layers

of ash, shards, chips of wall under wall, razed earthworks, the bottomless rubble of wars Jerusalem can't forget.

BORA; BORA-BORA

In the myths the islands are pieces of Taaroa's shell. The lone only one, of all things, made a shell, sat in it. Then he broke the shell, which fell into islands. Taaroa called out, there was no answer.

But geologists say the islands rose. The earth heaves, and took its time to build mounds 30,000 ft. from the ocean floor. How it must have boiled!

Rats, birds - no snakes or monkeys. Only what stowed away.

At the reef edge the current is in; a rude shelf growth, above which roils in a foot of water. Then a big wave, flooding the snorkel, salt water that I have to swallow before I can think to blow the air tube clear. Behind the live reef, there is debris of coral, bleached shells piling up, hermit crabs at home. And when it quiets down, a moray eel glares out of his crevice.

The old man from Delaware is just finishing eight months here. He's been coming since the war: We called it Bobcat Island. One time when I was back, the rats ate the biscuits right off the next bed, using me as a stepping stone: I caught fifteen of the fat buggers.

Crabs scuttling sideways into their holes. Or, on a muddy flat, lined up still, a salute of one red claw up, waiting for our bicycles to pass.

Taught me all the shades between dark blue and green. Taught dappled turquoise, and yellow sand underwater.

How long are you here? Are you long here? Depends what you call long. Thirteen years, the German woman says.

In the forests, rusting 7" guns. Only a few, oldtimers, know the way. The paths are overgrown: We once had a 5" water pipe over the hill to Faanui, but they didn't like it, they took it down.

Around another bend - ahead, the high ridge reaches for shore. Following it down, we see a crook, a clearing in lush green, in the soft and unpassable. Looking up to the mountain, quiet out to sea, stands a scholar's hut in a Sung scroll. We cycle by, and don't see any road leading up to it.

The brightest colors are the Tridacna clams studding the dull coral, stuck, flashing succulent lips of algae, the symbiotic colorer, perfect, nervous lip-ice of blue, fuchsia, spotted beige with a wavy green edge.

Coconut trees bent into the wind. Piles of coconuts. Signs saying tabu. The dried husks sell for fuel at 35 cents a pound.

Grapefruit sweet with the taste of lime.

The perfect cheese omelette. The chef says do you like it? Yes. I ask, was it with local cheese. Oh no, Gruyère from France, but the secret, do you want to know it, is crème fraîche in the omelette. It comes from Tahiti once a week.

Picasso fish, Rhinecanthus aculeatus, defend, snapping, their coral chapels. They can bite the spines off a sea urchin one by one, then turn the animal over, then eat it.

Steering by the island, in the distance, thin clouds hug the reef line, waiting for darkness' cooling permission to cross; rush in, rain.

Rain passes.

We had to hang up our socks, or the little buggers would take them into their holes. Then you'd find them a few days later, chewed up, that crab smell.

When the wind dies, the lagoon's changes on turquoise reach out, mirroring, to the reef edge, a white fringing quiet.

But when the waves and wind rise in the dark, the crash reaches back for us. It is unseen, damped, easily mistaken for thunder. For what light blinks out there?

DENIZEN

Coral outcrops; in them moored Tridacna clams flex fleshy purple or green mantles when shaded, an empress angel-fish darts off — reef reflexes meet the finned intruder in this underwater

Gaudi cathedral. But a few kicks along, the sand angles down, now lightly dappled by wavelets' higher tease of sun. The lagoon floor that was a crater swoops to the murk below. From which

a slow looping looms, white flashing on black. Ten feet wing tip to fleshy wing tip, rippling to a soft snap intact with the swing, in endless back somersaults, scaleless, shark-leathery

Manta alfredi, weird batoid angel of some deep, flexing cephalic finds sweeps water, water full of small lives into its latticed box of a mouth. Colors and coral fade . . . I remember: Plisetskaya's

black swan skim backward, into the void of Bolshoi's deep stage; satellites' autonomous light on dark pavane; I see - the slow motion replay of a full gainer off the high board. I am — a runway,

a black cargo plane forcing a landing on me. I am the updraft, the raptor, I see claws. But that is air, and here the devil ray's ring dive magic tows me out to currents I can't fight. The release,

a roiling brake, comes just before envelopment. The manta breaks for the surface. In the stretched moment I see, eel-like, the remora, flat oval sucking disk stuck to the manta's white underbelly.

OPENING A DRAWER

This shirt was folded by you, I know because there is no one else, because no matter how many times you showed me I can't get the second fold, back, right, so that the sleeve runs parallel to the buttons, and I mangle the small tuck at the bottom that makes the shirt fit my drawer, exactly. I'm sure it's your hands that do it; I think of you, far away, folding big things, the sheets we slept on, in another time folding little baby shirts fastened by real ties. The babies are grown, the small shirts on others' (maybe we saved a few in a box in the garage). But your hands enveloping a child, smoothing the wrap around a bowl of left-overs . . . These images come easily, the way you do up my body. They are my mind's stretch marks, dear.

CHRISTMAS, OR WAS IT A BIRTHDAY

One odd, light packet is left. Others held marzipan pigs, some scented soap, a tie traversed by small camels (that from a wish list). Gifts from the small people in our life, pushed shyly into reach, but with fever in the eye. The felt-tip marker label says "Pappa this is for you I hope you like my gift." Praise just feeds on this longing, primps. She's ready to hug this child. But I, who never learned to loose her naturally, examine the packet's folds and taped bulges, unwrap one layer of crepe, shake, say it is definitely not something to eat. The silk paper then rips to show the polyurethane pencil-holder holes punched for pencils, sized for markers, even a neat slit for a letter opener. Held in place by tacks, a paisley fabric apron hides the plastic. I couldn't praise it enough then, but it still sits on my desk.

HEIGHT

The man who said when you're on top of a mountain you can't see it was a miner.

CALDO

for Alberta Cifolelli

There are steep trails in to the hills, but in this landscape of the mind no path is cut for the eye. The way in is through color, catching warm round-crowned trees midground; then I'm let loose on a high precise horizon that exacts scanning across for detail of light on slopes. The shade of sky provokes a forward jump to pick up a purple mass of trees that reach up, again. To ask if these colors <u>are</u>, is to touch the land.

But then you've said that this is more about paint than grass, or hills; the fields of water or pasture remembering the way the airbrush drove paint, the soft tree line on the horizon alive on small flowing at the edges. The colors, sharp, abutting, owe much to quickly drying acrylic. What I'm jealous of is that you will feel differently. Just because you painted it! You and the paint put time, like music, in, uneven tempos struck by the brush passing to build up land from nothing, cut a fence, move that bush four times. I have to make do with clues of historicity, a couple of broad strokes across the hottest tree, or, my favorite meander calligraphy in your striated evening sky.

IN THE WAY OF SPEAKING

The man began to climb just as the sun rose, and the starlings' scat song was for him, alone. He picked up a stick to swat grass leaning into the trail, at every thistle crown. His boots grew wet. He was bent down over a beetle when she came down the hill. They laughed, the early walkers. He said something about wanting to reach the top before the sun rose. She said it won't be today, you'd have to get up earlier. He thought about both of them standing together at a fence, slowed to speak by the yellowing light on a roan. But what he said was that he was sorry, he was out of breath, and she replied that she was on the easy downhill part. He remembered coming up early one morning and seeing her dozing on the sofa, poorly covered by a sweater and a newspaper. He had brought her a blanket and covered her and said nothing. Now, on the trail, the man pointed to the horizon and said that he had never seen the sea wrapped around the land so far to the south. Birds flew into the silence. He went up the slope, she down, and when he remembered to glance back she was around the bend. The man climbed higher, stopping to watch a skunk, head down, cross to grub for some food. He thought I'm like that skunk, like the curled poppies. High on the ridge, he lay down on some flat rocks, let sun the warm him. He thought of what he should have said. Perhaps he slept ten minutes. Then he woke suddenly, stood up, stretched his arms to the sky. A few feet away on the stone lay a rattlesnake, its head following his hands. He put them down slowly, said "Sister rattler". The snake's skin shone in the sun. "I love you, sister rattler. I want your power". The man stood, eyes on the snake, stood still, until the memory of what she had said once about keeping calm and not moving if bitten, so that the venom not circulate, burst into his mind, breaking his and the rattler's space. He jumped from the rock and ran down the trail, not looking back.

IMPOSING PROSPECT

for Vivian Torrence

The landscape may be different; here, in clinging fog, the Santa Cruz hills' grass tops still fodder-green, overlapping, cascade to the sea. Or, there, in Andalusia, brown rocks that never saw grass fit for a goat. In resonant heatlight link to the afternoon sun, the earth rests so as not to crack more. There.

But here, or there, the instrumented reconnaissance of the scientist strews the landscape with numbers. Heat over the central valley (34.6°C at Fresno at noon, falling with elevation, 33, 31, 29), inland heat, draws the fog in off shore. From the top the sun flings digits of heat to droplets absorbing the energy that will disperse them. Spanish ground is cored with numbers; depths, feldspar gradients across faults.

The hills are quiet, the hills are old. So our inner, hid, slipping by the metering glance, sneaks another look at these dangerous hills, stocks them with life. There be monsters here, and not just real rattlesnakes, but rearing wild horses, a banana slug that turns into bêchede-mer, or, salt-water hippos. We try to fence them in, in the shadowed canyons, and, with the freedom of dreams, let them fight each other, lest they lunge at us.

CONDUIT

Maps instruct that dashed lines across contours mean tunnels. A rush, whoosh through,

pressure damping sound, into green light, the train stretching an arc of disclosed intent

to reach a somewhere and doing it, creak by clack. Veering in from right, on side-

swipe trajectory a flooded sweep, perhaps an abandoned track. The water deepens,

green to black, halfcorseted in stone, is someone's needed canal,

goods traffic or drink. We can't make out which way it flows. Then sky fills with a mounting

line. How will that water sheer on rock? In the one bend left we see a tunnel for

the aqueduct, whose plane mirrors the tunnel's dark maw, arch, a holy

approximation to channel shape; space that was rock, full-face bored, filled

to hide from flow a convexity underneath, to hold dear water

to the air before rushing-up, but still shadowed penetration.

HYDROPATHIC

The wintermatted grass has strong feelings about water. That flatness, lack of spring, it owes to the stolid oppression of one phase. It's not nice to keep in your shape such cold memory. Then it rains a spell, and some newly wet, not beading, soaks in. You find yourself crackling in the wind, afraid of drying, brittling sun. Can there be too much water? Not for the empowered, rooting worms, not for the straight, the green, thirstier, pushing up from below.

THE SOCIAL CONTRACT

Part of me is the rain, falling because its weight is unbearable to the air, falling.

Another part of me builds shelter, a hip roof to keep the rain that must fall out.

Then I am the gutter which has little to do with protection, or falling (though it thinks about falling, it has a slant). gutters are about channelling and foresight. They ask to be painted.

However, what I really want to be is the heavy metal link chain hanging from a hole in the gutter. Water and the chain, there's real freedom: flow, to dive, scatter, skip a few, spatter blowzy all down

hitting the concrete cylinder that weights the chain. That's when I think about responsibility you don't want this chain whipping around, banging against the house.

The rain is now in the drain,

constrained.

I lead it down clay pipes into the expectant earth, where I tell it: now you are water, free to be drunk by my beetles, to disperse down to clay, aquifers. Then you will be conducted out to the air that will pull on you. And I will tell both of us you've gone down far enough. And I will show myself the way up.

FIVE

MODES OF REPRESENTATION

If you look in old chemistry books you see all those line cuts of laboratory experiments in cross-section. The sign for water is a containing line, the meniscus (which rarely curls up the walls of the beaker), and below it a sea of straight horizontal dashes carefully unaligned vertically. Every cork or rubber stopper is cutaway. You can see inside every vessel without reflections, without getting wet, and explore every kink in a copper condenser. Flames are outlined cypresses or a tulip at dawn, and some Klee arrows help to move gases and liquids the right way. Sometimes a disembodied hand holds up a flask. Sometimes there is an unblinking observer's eye. Around 1920 photoengraving became economically feasible and took over. Seven-story distillation columns (polished up for the occasion), like giant clarinets, rose in every text, along with heaps of chemicals, eventually in color. Suddenly water and glass, all reflection became difficult. One had to worry about light, about the sex and length of dress or cut of suit

of the person sitting at the controls of this impressive instrument. Car models and hairstyles dated the books more than the chemistry in them. Around that time teachers noted a deterioration in the students' ability to follow a simple experimental procedure.

ORGANIC, INORGANIC

for Anna Valentina Murch

I've been watching the planting outside your window, Anna, the one Chris worked on for two days. He surrounded each bush or flower

by a circular earthwork to hold water; it's wet right now, but John says this place <u>is</u> about water. If you watch

for a while you spot some lizards and though I've never seen more than two at a time, I imagine there is one in each plant, and

that they crawl between, quickly crossing the exposed space. So . . . let's find a flat field (that will be difficult) covered with the four

grasses that grow here. We'll remove all the grass from some roughly circular areas. The ground will be brown underneath, it

can be raked smooth. A little way out of each circle the grass will be down a few inches (this must be done by hand).

In the middle of each clearing we will build a pyramid of one of the elements in its natural state: yellow crystals of sulfur, native

copper, white phosphorus, anthracite more stable than diamond. Oxygen will be in a balloon the color of arterial blood. In the grass

between the circles I see connecting channels of light, water, radiation,

wind, fire. . . the forces that tear, tear to build. To be gentle on this land

we could use ribbons, a linked chain of mirrors, plaited shades of blue and green, taut violet wires, a strand of naval flags. These we'll string

low in the grass, so that as you and I walk through, one or another ribbon will be seen. And we'll come back and watch the weeds grow in.

AT A COCKTAIL PARTY, THE 32nd NATIONAL MEETING OF THE AMERICAN VACUUM SOCIETY

First pump down the steel chamber The burble is reassuring, you know something is being removed. But your

conventional high vacuum is not enough. You need a getter: Shiny ultra-pure barium wire, made up pretty

in the shape of a ring or stirrup. Introduce it through a baffle, with a threaded screw. Watch it

change (there are ports) from metal to chalky gray. And you thought there was nothing there! Few materials

have good gettering properties. Our company makes one to eat up any volatile loose in your system.

LIKE A GAS FLAME GOING OUT WITH THE SOUND OF TRYING FOR LIFE

He says:

You know that copper kettle before you boil water in it, remember it needs retinning. There's nothing wrong with being unsteady the bottom didn't matter then, it was that fine ring, flaring that fit over a hole in the wood stove.

She says:

All the time we were talking his hands were moving, brushing away imaginary flies, pushing the sleeves down over those blue-gray arms. Then he'd roll them up again.

He says: I have this dream that I'm part of a machine making some chemical. Feedstocks come in, a pipe out of my mouth. One night there is this dry feeling that wakes me up, my mouth is filling up with a powder. that wasn't in the plan, but it's a factory and I guess things go wrong once in a while.

She says: I asked him if he wanted more oxygen, but he said, less, too much oxygen is not good for you, remember the Mercury astronauts. I told him I'd bring the children next time.

He says:

I remember the view of Toledo from across the Tagus. And this madonna holding twins in her arms.

She says: At the end he just kept talking about this woman leading him, holding him the way a man does, dancing the tango.

WHAT WE HAVE LEARNED ABOUT THE PINEAL

Descartes knew, being, knew that so central an organ confined mechanism and mind, entwined. But the gland held back being

of use, except to lizards, who, (Descartes liked dissection) deprived of it couldn't change skin's tint. In man it calcifies

to an X-ray beacon, and that is all we could do with this small centrality, till Aaron Lerner, awash in kilos of bovine pineals,

extracted melatonin, N-acetyl-5-methoxytryptamine, a mine of a name, a hormone that did bleach tadpoles. In lampreys,

the tuatara, the gland rises on a thin stalk from the brain, an unblinking eye just below the skin. But our pineal, light

insensitive, just pours out melatonin all the time, more in the dark so in diurnal rhyme, seasons timed in chemical levels.

Some depressions are eased by bright light. In hamsters melatonin sets sex cycles, but J. Arendt says: "...given to normal

subjects at a time of day (late afternoon) calculated to maximize any sexually related effects," just makes them sleepy. So not

the seat of the soul, but still a gland to reckon with, a gland to tell time. Descartes died of a fever in Queen Christina's sunshorn February Sweden.

Some of the material in this poem derives from an article by Josephine Arendt in New Scientist, 25 July 1985, p. 36.

IN NEED OF MENDING

A fence keeps the outside out; for instance, if this a neat house and there be cattle, we don't want the cows to do away with seven years of landscaping by letting them in where they shouldn't be. They leave cow-pies all over. And think about new ideas!

The fence also keep the inside in. This is not very important, unless you have small children or German shepherds. But then one day you fly into Berlin and see a hundred meters of cleared earth, a wall, you feel the mines there, waiting. . . And how would it be if I told you I said something stupid, or asked to be forgiven?

But now things get complicated. The fence I see has stakes or slats, so the fixity of intent of the one to keep outside out or inside in is undercut by this insistence on letting in out (or out in).

And suppose the fence goes around your friend's field too, so that you two share a stretch, which may be long. Then it becomes very confusing. Part of your outside is someone else's inside; and, what's worse, it's even true the other way around! There's more; those outside the two of you see one single fence around, not caring that you tend the part.

I'll tell you some fences I like: membranes, assemblies of proteins and lipids that define the outer wall of cells, then fold into the infinitely crenelated surface of the endoplasmic reticulum. Membranes that bound organelles, the double membranes of nuclei and mitochondria; flexible molecular fences, replete with gates, pumps, stylish chemical conduits, responding to dim light, firing neurons. It seems that in this life to sequester is to free.

And I love: balustrades, because they bound passages up or down, because they hint of balconies, ballrooms and terraces, and the word, what a word, sings of the calyx of a flower of a wild pomegranate.

ALTITUDES CHANGE ATTITUDES

When we first see them we scan quickly, up, so that the heart not miss, so that they be, and not the mushroom cloud. Air traffic skirts

thunderheads, until hemmed in by three megacephalic white risers we yield, enter the empire of clouds. Here small wisps,

condensates reign, in calm belied by the plane's bob. We know air is a fluid, but who is skipping us across

this surface? At times like these, it's soothing to think of Avogadro's number of molecules colliding, set on a random jig by heat

and the absence of it exchanged where cliffs and sea chance to meet. Sucked about by lows, whirling — nothing definite, aimed at us

could come from such sweet and airy chaos? Sure enough — a break, (how nice now to fly) a glimpse of a bedscape for outsize

gods, flash-frozen

billows, a nesting peace that might come from falling, unarrested. Now the fleece moves, rushes up. Wings slice

into gray, again. The clouds have kept the sun for their own purposes. We drop, precipitously. In the empire of clouds the dark one rains.

THESE POUR OBTENIR LE GRADE DE DOCTEUR ES-SCIENCES

On this gray afternoon the lights are off, a European habit. Aquiline features against a blackboard of meandering equations, Besancon defends his thesis.

Constrained to a line, tied by springs two molecules collide in resonant motion, most certain phase, united.

Hand behind back, one grasping the other, it helps to exercise control . . . and exorcise fear. Gray suit, neat shirt, but no tie In protest against the establishment Besancon defends his thesis.

Equations of motion simulate the quantum mechanical reality of a reaction. Resonances, branch points orchestrate a dynamic model.

The audience, restive, undulates in stochastic fashion. I flex a muscle, shift to catch sight of a bared calf. The seat sticks to my pants. Besancon defends his thesis.

The jury of five poses questions good, bad, indifferent. Each congratulates the finesses, the pondering of difficulties. Besancon drones on in reply, multiplexing the simplicity of a question. My French fades in and out On a sleepy Clermont-Ferrand afternoon.

BE WANTING

In this lab you may see women studying failure. Not of crosswalks in hotel atriums, not the Russian harvest, but the mind

route of failure, the ken and feel of coming up short, against, hard into. The not of things. Women are well-suited for failure

research: shuttle missions abort, what miscarriages of justice, they labored in vain to revive Natasha, and this term

tax-reform was a stillborn idea. Women are at home with failure: husbands' egos and surrogates must be appropriately

stroked, for he can't go off to work depressed. Their talk is never sparkling enough, and they bring up snapped clutch

cables when all a man wants is to watch the Giants score. So these women with high degrees have hypnotized the man who could

have screamed a warning to the girl, tape electrodes to a Georgian weight lifter straining to jerk ten pounds over his best. Natasha

safe, the weight up . . . there, these were, harpoons of soul intent. Maybe the lines just got a bit snarled. With a feint

on the what might have been, with a soft touch, it could be set right. They are encouraged to hear that physicists, men, now think

seriously of shadow worlds. The women pick one of their own, still young and good at math, to study knit life-line topologies.

SOMEWHERE

In me are hidden constellations.

Once I managed to sight one. through a lens of equations that could be solved only approximately. Still, with that imperfect rule I taught others the electrons' lobed motions. I'm wrong, often, I work this wild chemical garden with one old tool.

Let me show others new ways to see.

In me is the word that slaps worlds into being.

I muffled the word, but now I let it sing a little, watch owls and turkey vultures. I try to teach the word of mitochondria as vestigial symbiotes; it sulks, promises to sing of both worlds if I let it fly. But what binds it, binds me.

Free the word, world in me.

In me is a buried river that washes the mother lode.

Early on, an earthquake covered it. The river shifted, then filled in with detritus, gravel, the silt of slow seasonal motions. An occasional nugget washes to the surface.

Sink a shaft to touch me, love.

SIX

ESCHATOLOGY

I once attended a scientific meeting in Maynooth, the Pontifical Seminary of Ireland. The invited speakers were given the bishops' rooms, while the others attending stayed where the seminarians lived. The difference was that the bishops' rooms were twice as large, had two fireplaces to be stoked with peat briquets, stacked like brown egg-cartons in the hall. And hard to light. It was an Irish April, I had to pile more briquets on the fires twice each night. I had always wanted to a see a bishop's bathroom. Ireland probably has a lot of bishops, because we had this whole floor and a large communal bathroom. It was dark, a kind of labyrinth of marble partitions ending at eye level, shower heads sticking up above, like gray metallic sunflowers. So you could see your fellow bishops standing up, but not sitting down. The labyrinth was made of cubicles, each with a door to a bath and a toilet. Some of the doors were missing. I went into one cubicle, looked if there were a hook for the bishop to hang up his cassock. I tried to imagine the sound of the pastors of Ireland passing water.

GRAND UNIFICATION

This is just a rule; strings that meet, wriggling in their roughened up space-time, if their tips just touch, they must merge,

and bigger lines, loops, necklaces or thatchings self-assemble. This is so. But it is not real, it's just a rule. Loops tangle, there is an exchange

of quantum numbers, the stray collision sets the strings rotating, rippling, a whip and then the extra snap looses a particle

(boson or fermion) and light, any color. The math says it must be so. Mind you, this is not: people, passing, a look that locks on some missed braid

of a future. This is not: a hummingbird's tie to the sweet and red, tie testing stasis. And it is not the interlace of frost, another

season's nonlinear history of steam meanders. Nor: rope dancers. . . For those you need words. But here just watch the math, follow it across

or around or down, just follow its unhusking to the small world, where intuition is strung out as far as it will give, but equations

work as well here as for real billiard balls, whirling dervishes or galaxies (there is no need for me to say all this). In this smallness infinities,

anomalies slough off, the loops vibrate, a keen undulation, clockwise rippling nothingness in ten dimensions. Twenty-six the other way.

This fits. But it's not all. The dimensions must compactify, in a silent crumpling, curling in of what there's room for, into inwards' innards.

The quantum numbers then come out naturally, strung out on a loop that is gravity, the source of all interactions. We are <u>so</u> near understanding

everything. I believe, reasons without words, classy symmetries. It's a rule. And up scale the sun shines, frost melts and zing! go the strings of my heart.

THE MAN FOR WHOM EVERYTHING CAME EASY

came from an immigrant family and didn't own a book until he was 16 So his first desires were simple: Fournier playing the Bach cello sonatas, an illuminated globe. Since he did well in school, and this was America. it was easy. He worked hard, did interesting research and in time he could buy a Nikon with two telephoto lenses and a second recording of the Bach sonatas (he had made a mistake about Fournier). He was a little unhappy that when they needed a new second car his wife said that his joking suggestion of a Porsche just didn't make sense. Invitations to speak came from all over the world. What he wanted most (but this he was afraid to say) was that his children read good books, and not waste their time on hard rock. This was more difficult to arrange, because you couldn't pay your children to do what they didn't like to do. But in time they grew up, picked up Tolstoy and even, once in a while, put the cello sonatas on the record player. The man who seemed to do everything well actually began to like rock at least to dance to it (he still complained that he couldn't hear the lyrics). Running six miles each day, he had less trouble than his wife in keeping his weight down. He began to fly first class, and sat in on a class on Kierkegaard. The man who had everything now told his new intellectual friends: What I would really like is to have my soul as it is not.

CARCINOMA

This old anatomical drawing shows a front and back view of a man's lymphatic system. Nodes are dark numbered circles, lines connect the nodes. You have cut out these two views into triangles, and mounted them, tête-bêche, like a Jack of Hearts, except that where the hearts should be you've painted in a pair of dice. The card is above a body of dashed-line water. To the left, on a hummocked shore, there appear to be several artillery batteries, soldiers in black and white outlined Hussar dress. One group is passing balls to be loaded. In another, the powder fuse is lit by a bearded officer. Some green grass has been painted in, and you have drawn the trajectory of a shot from one of these cannons towards the card. But it's going to fall short. At top right, in a dark sky there is a loupe projecting, as if someone big, prismatic were watching this scene. The card is held above water by a woman. She seems to be struggling in the sea, though she holds the card steady. She's small, and it looks like you've xeroxed an old passport photo of yourself and used it as her face. There is a dot of red. the only warm color in this collage, where one might imagine her heart would be.

TERRORISTS

In the dark that is the bed, in the dark, that is the sole room in this life, we seem

to be taming a cat. The woman with me is wife, or mother, or both, and we are intent

on this impossible task of training an animal we can't see. We do hear it, its pacing,

always out of reach, and when it jumps (this we have learned to fear most, the silent space

of its jump) it lands claws out, with the smooth unthinking cat cut of claw into skin and flesh.

The sheets are twisted, they will be bloody in the morning. Lately it seems to be timing its jumps.

The woman and I are not sure who in this night of training, will be taught to kill whom.

LONGING

The earth births shapes in the mind that no real

land or laboratory knew: what a fissure might divulge,

dry rocks askew, the way a mesa waits for first

light. To free me of these forms I sculpt mockups

of wire, burlap, clay. When they dry, brown and

rough in parts, I walk around them with my hands and then

I draw them. Why do they always make me think of you?

CORRAL

for Carlos Fuentes

1

To grow animal, smart, the membranes of eucaryotic cells rim, twice, the coded library of the nucleus, tangle

then fuse to the gaudy network of sacs of the endoplasmic reticulum. Pinched off subcellular organelles empower cells

with the know-how to reject transplants, wrap a myelin sheath around a neuron, see red, and then, see yellow. Still better

microscopes make out more partitions. In the emerging inner texture, freedom, to change, is built from lipid-tailored

confinements, warm prisons where enzyme brews gel. Ways in and out are ingenious: shaped pores, embrasures, and this chemical

escalator called active transport. Fluid, mosaic, the membranes' holed sequestering works.

2

In 1655 Juana Inés de Asbaje begged her mother to dress her as a boy, so that she could study at the University

of Mexico. At the court of the viceroy she astounded forty professors with her mathematics and Latin odes. But it was not

a time for learned women in Mexico, so Juana entered the convent of San Jeronimo; within, watched two girls spinning a top, and

from what she called her black inclination for wisdom, had flour sprinkled, so that as the top danced out its loss of momentum one might see its spiral trace, and not a circle. Juana mixed earths, and in a library of 4000 volumes wrote theology and love

poems. Sor Juana Inés de la Cruz, shutting herself in the cell where knowing is permitted.