Chapter 1: Victims of Progress?

> "When we try to pick out anything by itself, we find it hitched to everything else in the universe."
>
> — John Muir

At dawn on a frosty spring morning in Nuosse Ladda, a village high in the Cool Mountains of southern Sichuan, Hxielie Aga crawls reluctantly from under the cotton quilt on her wooden plank bed, puts on an extra jacket, and walks a few steps to the hearth. The sun will not rise over the high limestone cliffs for an hour or two, but Aga has to mobilize the two older children to do their chores before school, and the three-year old will wake soon and want attention. The fire has gone out overnight, and Aga reaches for the pile of kindling she stashed last night in a low-ceilinged corner next to the thick mud walls of the house. She squats by the fire pit on the recently concreted floor, pulls out a cigarette lighter to get a flame started, and then fetches her pipe from the ledge above the hearth, gives herself a light and takes a long drag, clearing her head as she fans the unsure flames with one of her daughter's old school notebooks. She is thankful that there is now a spigot in the courtyard her family shares with her husband's elderly parents; she no longer has to make three or four trips to the stream every day to haul water in two buckets on a shoulder pole. This spigot, unlike the last one that the foreigners put in, runs all winter long and most of the spring, though by early April it gets pretty muddy as the streams run low before the start of the rainy season. Aga's father-in-law Dasuo says that in the old days before the Communists came, the river didn't have the seasonal highs and lows that it has now, that it seldom flooded and was almost never muddy. It ran clear in a single channel through woods on the valley floor, unlike its present braided, unpredictable course on the rocky, barren plain.

In a few minutes the fire is clearly taking, and Aga can put in some pine branches from the pile by the front door. It's running low, she notices, and soon she will have to go to the forest to collect more. It's a lot easier when her husband Mujy is around, but he is off in Guangdong in a factory that makes gaskets or something—Aga is never quite sure—so she will have to see if her sister-in-law Anyo wants to take the horse and wagon to go collect; otherwise she will need to carry wood on her back. Aga goes to relieve herself in the orchard out back, and returns to tie her hair back and put on her square black married woman's hat, and then she wakes the third-grader and the kindergartner. They will need to slop the pigs and feed the chickens before school, and it's probably time to clean out the sheep pen and replace the pine-needle bedding as soon as Dasuo has left with the flocks.

Aga never went to school, and Mujy only finished the third grade, but they are determined that their children will go at least to high school, and although they don't know much about what college involves, they have a dream that the boy at least, the bright kindergartner Vusa, might someday be a college student. But for now, having the children in school means extra work and a disruption in the daily schedule. School starts at 8:30, and the older children have to be fed, which means putting potatoes to boil in the kettle hanging from the rafters over the fire, which is now blazing. No waiting until mid-morning as in the days before there was a school. Aga tells the third-grade daughter Asa, to hurry and get dressed and fetch some potatoes out of the loft. In the old days, there

was a taboo on women going up there, but now Aga thinks that's silly, and even old Dasuo is reconciled to the new ways, and proud of the high grades his granddaughter is getting. He appears in the doorway and greets his daughter-in-law, then spreads his felt cape on the straw mat next to the hearth, lighting his own pipe and waiting for the kettle to boil so Aga can make him his morning cup of strong tea.

It's still early Spring, too cold to start planting corn just yet, but mother-in-law Ajymo heard the first call of the cuckoo yesterday, and knows that planting time is around the corner. Today should be a good day to go to town and buy seed, fertilizer, and plastic mulch film to get ready for this year's crop. After she's had a few potatoes and some sour soup, she'll put on her nicer skirt and an embroidered, long sleeved jacket, walk to town with a couple of her middle-aged friends, buy the goods, and hire a tractor to bring them back to the village. On the way to town, she notices that last-year's plastic mulch is still hanging shredded on the thorn bushes that keep the cattle and sheep out of the fields; she comments that it's ugly, and her friend agrees, but neither one of them wants to give up the extra income from the new hybrid varieties, which has helped them to buy a TV set and start saving up for a motorcycle, as well as getting the floor paved and paying the kids' school fees.

Meanwhile, as soon as the kids are breakfasted and backpacked, and stride gleefully off to school, both Aga and the old man get ready to leave for the day. Dasuo puts his felt cape over his shoulder, adjusts his cloth turban, and tucks a little flask of liquor into his shoulder bag, along with some potatoes, a few apples, his pipe, and some playing cards. He picks up his wooden walking stick that doubles as a crook, and opens the gate to let the sheep out. He walks along the barren river valley; at this dry time of year there are not many streams to cross. A kilometer and a half away, there is a patch of fairly good grass, and the sheep stop here to graze while Dasuo waits for his friend Ssyhxa and his flock, whom he sees coming from the village in the distance. It has been harder and harder to find good grazing in the past few years; much of the valley floor is barren, and up on the mountainsides there are more and more erosion gullies. Dasuo recalls that before the Great Leap Forward, this hillside was covered with a variety of trees—massive oaks, tall pines, fast-growing alders, and even wild cherries and plums—but that after these were all clearcut for the tile kilns, they have never really regrown, and with more people and more sheep in the village, there really isn't enough pasture to go around. The wild animals are mostly gone, too. Dasuo imagines himself again as a boy of twelve, running excitedly up to the first water deer he ever shot, eager to bring it proudly back to his mother. He also remembers the time when he heard the roar of the last mountain lion anybody ever saw around here—it has been over 60 years. And he thinks he would still recognize the spoor of bears, wolves, red pandas, even though all the sightings in the last decade have been unconfirmed. Ssyhxa's call wakes him from his reverie, and they agree that they should probably check out the ridge-top meadow, where Dasuo remembers clearing a field for buckwheat when he was a boy, and where there should still be some good grass.

Meanwhile, Aga is in luck—her sister-in-law was also running low on firewood, so after the kids are off to school they hitch the little pony to the wagon, put down a felt pad in the back for Aga's three-year-old and Anyo's toddler to ride on, grab the axes, and

clippety-clop slowly up the valley, where at this dry season they are joined by other families with carts, on foot, or increasingly in the last few years in tractors. Close to the valley floor, the forests have never regrown after Mao's campaign to increase grain production in the 1970s, so Aga and Anyo will have to park the wagon, tie up the horse to graze at the foot of the mountain, and hike up to where there are still trees. Anyo carries the toddler on her back, but Aga has to coax the reluctant three-year old up the narrow trails. They are not allowed to cut down any trees, ever since the government started its reforestation efforts in the late 1990s. They can cut branches or take downed wood, or if the forest warden isn't around, they can chop a small tree down, leave it to dry (it's lighter that way) and then collect it as downed wood later on. Anyo has heard her mother-in-law say that there used to be a variety of trees up here, including slow-burning alder, but the recent regrowth after cutting has been mostly pine, which has higher water content and burns too fast. The two women chat as they chop, and Anyo stops to nurse the toddler while Aga continues working. After an hour or so, they have a pile of nice-sized dry branches, so Aga sits on the ground beside the pile and ties the bundle onto her back with the rope. Anyo, toddler strapped to her back again, helps Aga up, and she makes the first of two trips to the top of the skid trail, where she dumps the bundles. When wood is all collected there, they shove it onto the steep, bare, eroded skid trail, and it tumbles down to where the horse and cart are waiting. They load up the cart, with the tools and the children riding on top of the woodpile, and get back to the village to unload before the older children come home from school in the afternoon.

It has been a good day. Cold but not too windy, and Ajymo got the seed, mulch and fertilizer for a good price, meaning that she probably will not have to borrow any money against the projected crops. She even had enough left over to buy herself a bowl of spicy noodles at the little food stand, and bring back some candy for the grandchildren. Dasuo comes back with full sheep and stories about how the trees are continuing to encroach on those ridge-top pastures. His friend Ssyhxa thought he heard a wolf howling the night before, so maybe some of the animals are starting to come back. There is wood in the house for at least a week now, and daughter Asa reports excitedly that she got 92 points on her math test. Surely this girl has a future, Aga says to Mujy, who has called Aga from Guandgong on her new cell phone to report that he may be able to bring some money home when he returns for the Fire Festival in the summer.

In Guangzhou, in a neighborhood much nicer than where Mujy lives in his factory dormitory, an alarm goes off at 7:00 on a cool, hazy morning. Wang Fang, 28, punches the "off" button, sits up in bed, and tentatively pulls aside the drapes on his 34th-floor window, looking out as the sun rises a dull red in the canyon between two skyscrapers. "Chairman Mao, the Great Red Sun in our Hearts," he thinks with a chuckle as he lets the curtain go and slumps off to the bathroom and then to the kitchen, where his girlfriend Xue Hua is running the espresso machine. They're being old-fashioned today, and Hua has the rice porridge in the automatic cooker almost ready for breakfast, together with some pickles that her grandmother made last fall and peanuts and shredded pork that she picked up at the supermarket on the way home from the subway station last night.

Usually, they just pop some bread into the toaster to have with their espresso, or else grab a quick bowl at the noodle stand on their way to the station.

Wang Fang and Xue Hua just moved into this apartment 6 months ago, a few weeks after they announced their engagement at a banquet at the villa near Baiyun Mountain. They had considered shark's fin, which everyone seemed to be serving at their banquets these days, but Fang had been reading environmental articles on sohu.com, and decided that they ought to take a stand in favor of biodiversity and endangered species, even if it meant a possible loss of face in front of their affluent friends. Hua thought, actually, that they might gain more prestige by *not* having shark's fin, since environment and conservation had become hot topics in the financial community recently. The Kobe beef, stewed garupa, and dragon-phoenix soup with snake and pheasant had seemed to please the guests just as well.

The apartment is a step up from where they have both been living previously with their parents, in redecorated old work-unit housing blocks from the early 1980s. It's in a new gated community that advertises itself as 21st-century green, with double-insulated windows, solar panels on the tower roofs to provide part of the electricity, and new-generation, super-energy efficient air conditioning. Reverse-osmosis filters on the faucets in the kitchen allow them to drink the water without boiling it, the wood floors are good Indonesian teak, not that cheap Siberian stuff that some of the cut-rate builders are using.

After breakfast, the couple suits up, she in a conservative dark blue from Armani, and he in an informal medium-gray Brooks Brothers that he wears when he is out in the field. He will take the Audi today, since he has to drive out to see a borrower's factory in Foshan as part of the approval process for an industrial-expansion loan. Ordinarily, they use the car only to get out of town on weekends. They go down the elevator together, hand in hand, and step out into the air, which as usual at this time of year, smells faintly acrid; Fang thinks it's probably due to a combination of some of the coal boilers that haven't been replaced in many of the old factories and the increasing amounts of auto exhaust in the air. Still, it's better than it almost ever was in Beijing, where they both met at the Financial University before moving back home to Guangzhou to take banking jobs. They kiss goodbye at the garage entrance, and Hua walks out the main gate of the community, nodding to the security guard in his blue uniform. She has lived in big cities all her life, but she always still feels a little jolt when the decibel level of traffic on a main road hits her. There is talk about restricting traffic on some of these main roads to odd- and even- license plate numbers on alternate days, as has been done in Beijing, but for now all the cars, trucks, and buses are crowded together, inching along in the morning rush hour. As Hua walks the two blocks to the subway station, she notices that the sun has climbed high enough in the haze to change from deep red to a kind of yellow-orange, but she can still look straight at it without her shades.

Fang takes over an hour to drive the 25 kilometers to the gasket factory outside Foshan, traversing bumper-to-bumper city streets, a freeway that is a little bit better, and then from the exit to the factory gate a strange mix of broad, newly-laid concrete streets flanked with as yet unoccupied storefronts, and old, potholed asphalt lanes, just wide enough for one car, flanked by little shops selling noodles, toilet paper, and beer, and populated by old folks in pajamas who haven't started their mahjong games yet. He rolls

down his window to announce his business to the guard at the factory gate, who tells him to park in the visitors' spot by the office, where a young assistant wearing a cheap knockoff version of Hua's navy-blue suit is waiting to usher him into the manager's office to talk about the loan.

The manager, a man of 50 with slicked-back, obviously dyed hair, tells Fang that his business is on the upturn again, since exports of machine parts have started to expand after the end of the world financial crisis. But rising coal prices and increasingly strict environmental regulations have cut into his profits, and he thinks the squeeze can only get worse; how long will he be able to banquet the Environmental Protection Bureau into looking the other way? With the revival of the manufacturing sector after the 2008-09 downturn, there have been sporadic labor shortages, driving up wages even for the minority workers from places like the Cool Mountains of Sichuan, who tend to complain less than the more organized Han people from Hunan and Jiangxi. He has a little cash on hand and a bunch of big orders coming in, and he figures that after those orders are filled, it would be a good time to bite the bullet and install new, energy-efficient boilers burning natural gas, solar panels to generate electricity for the workshop floors, and wastewater purification equipment. He estimates that he will need 10 million RMB for the renovation; he will expect to have a third of that on hand, and is looking for a loan for the rest. Fang tells him that it sounds like a reasonable proposition, but he will have to look at balance sheets. The manager assures him that the books will be available for inspection in a half-hour or so, but perhaps first he would like to tour the facilities. Mujy, working the day shift on a hot press in the fabrication shop, sees the young man in a suit walking down the aisle with the manager, and tries to catch their conversation, but it's in Cantonese, which he doesn't understand much of yet.

After looking at the books, Fang tells the manager that his bank will be happy to take a loan application, and explains to the earnest young accountant how to fill out the paperwork, and which bureaucrats need to approve the application before it comes to the bank loan committee. It's almost lunchtime. The manager invites Fang to eat at a local restaurant featuring carp and lobster, and they drive off in the Audi with two of the assistant managers, all of them pointing out to Fang the new factories and other construction projects in the area, which only ten years before had been mostly rice fields. Fang has also read in a local blog that one reason this area's agriculture has disappeared is because of chemical pollution from local factories; he wonders what the gasket factory has been discharging into the water, and then thinks, maybe he'd better not wonder too hard, if he's going to be eating local seafood.

Stopped at a traffic light on the way back to town, Fang gets a call from Hua on his mobile phone. She has been stuck doing paperwork all day, but should be done a bit early, and wonders if he can pick her up and drive out to the garden villa in Panyu, where they were thinking of having the wedding next summer. She also hears that there is a nice Farm Home Happiness restaurant out near there, where they serve only fresh organic food raised locally. "I'll pick you up at 4:30," he says before starting back into traffic.

Chan Ming Hok wakes up early this morning in the West Room of his mud-walled house in the hill country of northern Guangdong. He won't be in this old mud house much longer, he thinks; although the new brick-and-glass house down below was supposed to be done for the New Year Festival, he had a payment dispute with the contractor who came from outside, and that stalled the construction. But the family hopes the house will be finished during the slack season of the first rice crop, maybe in about two months. He reminds himself that it's time to consult the fortune-teller about an auspicious day for moving in—maybe he can do this when he goes to market as soon as he's done with sowing the rice seeds. As for today, the seeding needs to be done, which should only take the morning, so maybe in the afternoon he can get a start plowing the north field, which is a little warmer than the others because of its south-facing exposure, and ought to be transplanted first. Time to get up.

Since it's still not really busy farm season for another 10 days or so, Ming Hok can eat breakfast before he starts the day's farm work. This is the last day for awhile that the family will eat breakfast from the same stove. This morning his younger son Kwong Kwok and daughter-in-law Hui Chun Lei will board a bus to go back to their gardening work in Panyu, leaving the boys here in their grandparents' care. Chun Lei was, as usual, the first one up, and she has last night's rice boiling on the mud-plastered stove to make *juk*, which they will eat with some cabbage pickles, peanuts and, for the first time in the new year, some freshly stir-fried bok choy that Chun Lei picked in the garden last night right before dark. Kwong Kwok is sitting on one of the low kitchen stools chatting with his wife, and offers his father one of the commercial cigarettes he always brings back from Guangzhou; they're available locally, but the old man is still partial to the hand-rolled tobacco people have been smoking around here for generations. Still, he accepts the cigarette, and they sit smoking silently until the *juk* is ready. Ming Hok's wife Suk Choi Lan appears in the kitchen with the boys in tow, and she helps them fill their bowls from the steaming pot, after which they go sit at the kitchen table and eagerly add the peanuts and fresh bok choy, while the adults take their bowls out in the alley to squat and chat with neighbors while they eat.

After saying a perfunctory good-bye to Kwong Kwok and Chun Lei, Ming Hok gathers his basketful of rice seeds, which have been soaking for several days, loops it over one end the end of the long-handled hoe, hangs two big bundles of thin rectangular plastic sheets over the other end, and slings the whole thing over his shoulders like a proper carrying pole. These plastic sheets are new in the last few years, and they will make it a lot easier to lift the seedlings for transplanting when they're ready in a few weeks. The load is heavy, but nothing like some of the loads he carried as a younger man, and he heads for the sunny corner of a rice paddy that he has chosen this year for his seedling bed. Ming Hok has been farming fields in the same section since he was a boy when the production teams were first organized in the 1950s, through the Great Leap Forward and the time of collective agriculture, as everybody calls it, and into the era of returning land to the households. Most of the older village men are out in the fields today, seeding or plowing, and on his way to the fields Ming Hok stops and greets many of them, and when he sees his first cousin Ming Lu, they stop and share a smoke, and chat about the weather and the progress of this spring's planting.

Ming Hok has already plowed and harrowed the section he has chosen for this year's seedbed, and sprayed herbicide to keep the weeds from regrowing. Yesterday afternoon he had removed a couple of big rocks in the embankment at the upper edge of that paddy, to let water in and get the mud good and wet, after which he replaced the rocks so that the water would not be too deep this morning. Ming Hok still remembers when this area was converted from forest to terraced paddies. It was in 1958, at the time of the high tide of the Great Leap forward, when he was in the third grade, and even the schoolkids only went half days in order to march up to the Mud Mountains and join the masses of local people carrying dirt and pouring concrete to make the dam for the reservoir. The next winter and the winter after that, people were starving after the work teams came and requisitioned almost all their rice to take to feed the cadres in the cities and leave them with only taro and sweet potatoes, which themselves ran really low before the first harvest. Ming Hok still has a vivid memory of the bitter taste of the ground tree bark they ate for a few days before the relief grain finally came. But the reservoir has held water ever since, and these fields are still among the most productive of the village's lands.

After sitting wet overnight, the mud in the seedbed is already fairly smooth, but after he sets down the seeds and the seedling sheets, Ming Hok still spends some time clomping around and hacking at the mud with his hoe, until it is smooth enough to reflect his image under its thin coating of water. He takes a break and rolls himself an old-fashioned smoke, and then unties the big plastic sack with the seedling sheets, and laboriously places them by hoeing away the mud and setting them about 6 cm. deep, and then covering them over again with a smooth layer of mud. He is careful to leave little aisleways about a quarter of a meter wide between patches of smoothed-over seedling sheets, so that when he pulls the sheets out later for transplanting, he will be able to walk between them and reach every sheet without walking on the tender seedlings. The actual sowing is the easy part: Ming Hok scoops out a couple of kilograms into a shallow basket tray, which he carries in his left hand as he walks up and down the little mud aisleways broadcasting the seeds with his right hand, trying to get them scattered as evenly as possible. After he finishes each section, he smoothes the mud over the seeds with a board that he has left out here for that purpose. By the end of the morning, he is finished with the seeding, and heads back home with the empty plastic sack stuffed into the empty seed basket on one end of his hoe. He'll need to come back this afternoon; after he checks the water in the seedbed, he will begin plowing some of the main fields, a task that will take him two or three more days.

Meanwhile, Kwong Kwok and Chun Lei say goodbye to the boys, whom they won't see for a few weeks, and walk, duffel bags in hand, along the path toward the new house, where they stop briefly to check out the progress of the workmen now wiring on the second floor, getting ready for the plasterers and for hanging the fancy light fixtures that Chun Lei helped Kwong Kwok's mother pick out. The new house is right beside the dirt road that now reaches the village, and they are lucky enough to find a neighbor headed for town in his new tractor, who will give them a lift. They get to town early, and since they have a half hour or more before the bus leaves (if it's on schedule, which it often is not), they find a little store where they can buy some bottled water, oranges, and

bananas for the four-hour, two-transfer bus trip to Panyu where they work in the vegetable garden.

The vegetable farm sits in an ever-shrinking patch of agricultural land amongst factories making everything from Christmas tree ornaments to gaskets, beside a narrow, paved road. There is no regular bus stop there, but Kwong Kwok asks the driver to stop by the three-story, tiled farmhouse where the absentee owner gives them and some other workers free rooms as part of their monthly wages. Next door is a more rustic-looking building, with a wooden sign reading *nong jia le*, "Farm Home Happiness," and below it, "free-run chicken, river fish, local vegetables, all organic," with a cell phone number to call for reservations. As soon as they set their things down in their little room, the manager, a Panyu native, is already in the doorway. "What took you so long? We've got lots of reservations for dinner tonight; old Lau from the shoe factory, some bankers from town, three couples all planning weddings at the villa. I need you to harvest bok choy, taro, gailan, tomatoes and peppers from the greenhouse, onions, garlic, ginger. Catch and kill me three chickens; I'll need them plucked and cleaned by 5:00. I'll call Wong at the fish market and see if any river carp are in from this afternoon." Kwong Kwok and Chun Lei hurriedly set out for the gardens.[1]

Gulsara never sleeps well the night before a move. For the last week or so here in the village, near the border between Xinjiang and Mongolia, the weather has been warming, and her sons have already been back from the winter pastures for two weeks. The village is comfortable compared to the dugout down in the desert where she always spent winters until she became a grandmother for the first time eight years ago. But for the last few years, the only ones who have gone to the winter pastures have been Gulsara's older son Zhanat, his wife Hanae, and his younger brother Sirjan. Gulsara and her husband Murat stay here in town in the mud-walled compound, stall-feeding the horses, camels, and cattle while taking care of the three granddaughters. There's not much to do other than the housework, and Gulsara can watch DVDs in the evening, or go over to her sister's house to drink tea and chat. When they leave for the spring pastures, Sirjan, the younger unmarried son who went to high school and is still hoping for a desk job in the bureaucracy, will miss having spare time to hang out at the Xinhua store in the county town and read Kazak-language books. But every spring at about this time, Gulsara starts getting stir-crazy. This year Hanae has arranged to have her oldest daughter Gulnur, who is in the second grade, stay with a cousin until school is out, so Gulsara can take the preschoolers along to the spring and summer pastures now. Relatives will bring Gulnur up to the pastures when classes are over at the beginning of July. Today everyone is anxious to get going, so Gulsara is up while it's still dark, boiling water for the milk tea that they will have for breakfast along with some leftover bread and borsaq fried dough**.** As they start eating they hear the putt-putt of a diesel engine stop in the lane outside their house, and Zhambalat, a distant cousin who will take them and their gear to the pastures in his newly-purchased used blue East Wind truck, walks in to wolf down a quick

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[1] For inspiration and invaluable advice on the Guangdong agriculture story, I am indebted to Gonçalo D. Santos. See in particular his dissertation (2004) and his work on ecological agriculture (2009)

breakfast along with the family. Like other women in the village, Gulsara is used to people coming and going at mealtimes; there's always some extra food available.

After eating, the first thing to do is pack the truck. In the general scramble, the men pack while the women shout instructions and cautions—"careful with those porcelain tea bowls—if you break any it will be hard to get more up in the pastures." They haul out the yurts from where they have sat folded up on racks in the storeroom over the winter. The low wooden chests with pillows and tablecloths, the rugs and quilts, all the pots and pans, including those they have just cooked breakfast in, big bags of flour, everybody's spare clothing, extra saddles and riding gear, and of course the new boom box and the CDs of music from Kazakhstan, all get piled in the back of the truck. The yurt itself goes on top so they can get to it—first the felt mats that serve as outer walls and roof, and then the folding red wood wall and roof frames on top of the mats, so they don't get crushed.

By mid-morning the truck is piled to overflowing, and Murat goes with his two sons out to the corrals to saddle up their horses. Everyone knows how to ride, of course—8 year-old Gulnur is already quite capable on horseback—but Zhanat is the real horseman of the family, and he will ride his bay, who helped him take second in the races last summer. After they've saddled up and mounted, Zhanat and Sirjan ride out to round up the sheep. After the last things are on top of the truck—everyone's duffels with Adidis, Nike and Reekok logos— and secured with strong ropes, Gulsara and Hanae say goodbye to Gulnur and squeeze into the cab with the driver and the two youngest girls on their laps. The old diesel engine starts with a cough and a puff, and the overloaded vehicle pulls swaying onto the short paved stretch that heads north out of town for a few kilometers until it changes to typical Xinjiang dirt. Gulsara, having seen the condition of the truck, hopes the axles and tires will hold out all the way to tonight's camp.

The three men follow behind with the sheep and the three milk cows; if the truck doesn't break down on the bumpy dirt road, it will get to tonight's camping spot an hour or two before the riders and the animals, who will gain on the truck in the steeper pass. After riding for an hour or so, the herd starts up the foothills where the grass is newly greening and fences, built last fall by the Animal Husbandry Bureau, now line the migration corridor a few tens of meters on each side of the road. Sirjan is the first to comment:

"Brother," he shouts out to Zhanat as he spurs his horse and angles over next to ride next to his older brother, "lucky we got started ahead of the other families. The grass is already growing well for this time of year, but by the time 30 or 40 families have gone through here, there may not be much left for the stragglers. They'll have some hungry sheep on the way to Tachete. Although I suppose it won't be long before some gaps just sort of…um…appear in the fences and sheep start grazing outside a little bit."

"Ah, Sirjan, I really don't know what people are going to do. There are so many more people now, and so many more animals. And the price of meat keeps going down, so we have to sell more and more sheep, and even wool, just to stay even. And you know Bolat at the Animal Husbandry Bureau. He's been working with those arrogant Han scientists, which is awkward for him because they're always telling the herders what to

do, but what they say about the pastures getting worn down is really true. If you ever get that desk job you keep trying for, what will you tell them they ought to do?"

"Well, for one thing, I don't see why we need a reserve for the wild horses. I heard they brought them here from a foreign country. What for? What good is a horse that you can't ride and you can't eat? We never made it over there this winter, but maybe we should make a point of checking it out next year. I bet it's easy to sneak in."

"Yeah, maybe we should. But seriously, Sirjan, do you think it makes sense to put fences around everything and allocate us each a little square of pasture, like we were farmers or something?"

Absorbed in their conversation, the brothers haven't noticed that their father, who was riding at the head of the herd, has started to hang back and has been listening to their conversation. He suggests that this might be a place to stop for a short break, as the sheep look tired and there's pretty good grass up on that southwest-facing slope. "Things were rough in a way back in Chairman Mao's time, with the class struggle and all that nonsense, but at least our flocks were still collective—it's funny, the production brigades weren't really that different from the way we managed the herds on the clan pastures back in my grandfather's time. Now all this parceling out—we've had it for 25 years, but it still doesn't make a lot of sense to me. I'm too old now, and I'll keep coming out here as long as I can ride and I'm some use with the animals. But if I were younger, I might just be considering going along with Sultan."

"Yeah, he actually called yesterday from Kazakhstan, wondering when we were headed for the spring pastures," Zhanat interjects. "He says the government over there has promised him pastureland, and he says the schools are all in Kazak language; none of this having to do everything in Chinese like we have here. But I don't think a whole lot of people are going to accept Kazakhstan's offer. It's too big a change, and what happens if they close the border again? You might never get to see your family. I'm guessing a lot more people are going to be doing like Serik. Did you hear he actually headed off with a labor recruiter to Guangdong or someplace to work in a factory? I'd be scared to go down there. We all know what happened to those Uyghurs last summer."

In midafternoon, the women in the truck have arrived at the overnighting spot. There are a couple of yurts by the road that Kazak families, who left town a few days earlier, have set up as little stores. A few nomad families have already used part of their yurt frames and felt walls to build triangular tents, which only take a short time to set up, convenient when you are only staying somewhere for one or two nights. Luckily, it's not windy today, but it's still going to be a chilly night in an open tent on the first night of the early spring migration. Gulsara directs Zhambalat to park the truck in a west-facing area not too far from a stream. The little girls jump out of the truck and start running up the hills, headed for noplace in particular, just glad to be out in the open after hours in that truck. Zhambalat helps the women pile some things out onto the grass that they will need for tonight. While waiting for the men to arrive, Gulsara walks over to the store yurts by the road. She doesn't really need to buy anything, but she's eager to catch up with the families who have arrived earlier. They chat about their families, what weddings took place in which winter villages, what achievements the kids had in school, and how the

price of alfalfa seed went up again. The women at the store point out the new items in the assortment for this year: new candy flavors, new batteries from Taiwan, and of course, new fabrics. The satellite phone is already set up and the price per minute is the same as last summer. One shopkeeper tells Gulsara they ought to rest an extra day, two families with large flocks just headed up towards Tachete this afternoon, and the grass in the narrow corridor might still be too short if they leave tomorrow. Gulsara thanks them for their advice, but she's not sure how long the driver is available. Anyway, she will consult with the men, whom she can now see approaching with the flocks in the distance. When they arrive, everyone sets to work getting another tent set up before dark. Since they have another day in the truck tomorrow Zhambalat, the driver, helps out and stays for a dinner of chai, three day old bread, *borsaq* and dried *qort* cheese. After one more day of travel, they will arrive at good spring pastures where they can stay for a few days, Zhambalat will drive the empty truck back to town, and they will be able to set up their full yurts.[2]

Li Lishui still feels lucky to be a college student almost every morning when she wakes up, even though she is already a junior in environmental engineering, completely accustomed to student life in Beijing. Today her three roommates are still sound asleep in their bunks; it hasn't started to get light yet, and as Lishui glances over at her cell phone she realizes that it's only 4:30, still an hour before she had set the alarm to go off. But Lishui is excited and can't sleep; today is the start of her class field trip to the Yellow River. She'll have to wake Tan Jing in a little while, but right now she just lies in bed and thinks about how she herself is a child of the Yellow River, and that going to "investigate" the River for the next four days will be like going home.

Lishui was named for the River. She was born in a village just a few kilometers from the its banks, on a rainy June morning, her mother tells her, after months of drought had dried out the river next to her home, to the point that the local soldiers were driving their jeeps right across the riverbed, rather than bother to go up- or downstream a few kilometers to the nearest bridges. Her parents, farmers whose ancestors had lived by the River for over 30 generations, had wanted a boy, like all farmers did in those days, to inherit the farm and take care of them when they grew old. But the girl came the same day as the rain, and so they called her Lishui, "beautiful water." Tan Jing thinks it's a dumb peasant name. Tan Jing is Lishui's best friend, but she came from privileged family, and her professor parents had always expected her to go to a top university and become a scientist. Lishui was the first child in her family to graduate even from middle school, and her parents always assumed she would either settle down and marry a local boy or get a factory job somewhere. But her grades in middle school were outstanding, and one day a teacher came to her house to tell her parents that if they let her go on to high school, she would very likely get into a good college, perhaps even a prestigious

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[2]For inspiration and patient, invaluable, illustrated advice on the Kazak story, I am indebted to Astrid Cerny. See in particular her dissertation (2008) and her article on Kazak immigration (2010).

university in Beijing, so they relented and borrowed some money from relatives to pay the high school tuition.

Lishui went to the river with her father now and then when she was little, but she dates her determination to become an environmental scientist to the year her little sister Fushui was born. Originally Lishui's parents had only been allowed to have one child, but the policy loosened a few years later for couples whose first child was a girl, and in the worst year, the year that the river dried out for over seven months, Lishui's mother got pregnant again. By the time she was eight months along, there hadn't been any water in the river for over a hundred and fifty days, crops were beginning to wither in the fields, and the village taps were only turned on for an hour every other day. Even though his wife was about to deliver, Lishui's father had decided to march with a group of villagers to the local water office to demand that they be given water for their fields. Lishui begged to go along, and he agreed to take her—this girl of mine is really bright, he thought, and she should start learning something about how the world works. Lishui sat on her father's shoulders and listened to the farmers' representative argue with the official from the water office, and she is sure that was when she decided to become a hydraulic engineer.

Lishui's parents were less disappointed with a girl this time—people were beginning to think it wasn't as important to have a son as it was in the old days—but they were really worried about the River, so they called her Fushui, "restore the water." Tan Jing thinks it's an even dumber peasant name.

It's almost 5:30, there is a glimmer of light out the window, and Lishui gently nudges Tan Jing—"Get up, sleepyhead cat of a Princess, it's field trip day." "Oh quiet, Peasant, of course *you* can't sleep when we're going back to the *rice paddies*." They always call each other "Princess" and "Peasant." They pull on their long underwear and their jeans with the embroidered flowers on the pockets, and stagger off to the washroom together.

As they walk hand in hand to the only canteen on campus that's open at 6:30 for breakfast, the girls comment that it's a beautiful day after that horrible dust storm, even though the dust is still piled half a centimeter thick on the window frames. After the girls wolf down a quick bowl of noodles, they go back to their room to pack for the trip. Tan Jing will bring all her gear—iPad, digital SLR and tripod, electronic Chinese-English dictionary and, Lishui thinks, probably three changes of jeans for a 4-day field trip. Lishui can't afford any of this stuff—she got a PC laptop as part of her scholarship, but it's useless on batteries, so she'll take notes by hand and snap pictures with her giveaway Nokia cell phone, and if she gets her one good pair of jeans dirty on the trip, she'll have to just wear them, or, she smiles to herself, maybe borrow a pair of Tan Jing's. They had a discussion last night about water. Always before, Tan Jing had bought bottled water to take along on trips, but now the environmental club is having a campaign to cut down on plastic waste, so Tan Jing decides to just bring the old thermos cup and drink tea, as she says to Lishui, "like a peasant or something."

Last night they had the opening ceremony for the field trip, with speeches by several people from the environmental NGO where Lishui and Tan Jing are student

volunteers, and also by a bunch of reporters and camera crews. There were green banners—a change from the usual red because this was an environmental event—and lots of speeches, but the class had voted down the proposal to release balloons. So this morning the 25 eager students just board the bus, and as soon as they get on the freeway headed for Shandong Professor Wen, the head teacher who just got back from earning his Ph.D. in America, passes out the schedule for the trip, grabs the microphone from its rack beside the driver, and begins to lecture on the current state of Yellow River management, as the broad plains of North China speed by out the window.

It's about 400 kilometers across the broad plains to Dongying at the mouth of the river, and the bus arrives in time for late lunch. As they pull into the main gate of the Petroleum University, students from the Department of Environmental Science and Engineering are there to greet them. There are only a couple of female students in the group, who quickly introduce themselves to Lishui and Tan Jing, and they chat over lunch about what life is like in Beijing, about dust storms, about how the local government is trying to clean up the oil fields while not cutting back production in the face of China's ever-growing need to import oil, and about what life is like for girls in an engineering department.

A young instructor from Environmental Engineering accompanies the Beijing students as they get back on the bus and drive to the Water Bureau, where an official ushers them into a conference room and shows them a PowerPoint about the role of hydraulics in the Comprehensive Plan to Develop the High-Yield Ecological Economy Zone in the Yellow River Delta. The Plan includes designing a comprehensive series of hydraulic projects in accordance with national policy, improving the flood control system along the River and the wave barriers along the coast next to the river mouth, integrating urban and rural water supply for the entire district, increasing the reliability and efficiency of the irrigation system, preserving aquatic and marine ecosystems, and improving the efficiency of water allocation and management. Lishui wonders aloud to Tan Jing if a plan like this is really going to restore the Mother River, the Beautiful Water that she is named after, or if he's simply proposing one more technological fix that will create a problem by solving one. "Peasant!" whispers Tan Jing, "don't you know that those bureaucrats always have to *make* plans, but they never have to *implement* them?"

After the presentation the students finally get to drive out to the river mouth, which takes about an hour and a half. At first they pass through rice fields, which will be planted for sure this year, the tenth in a row that the River has not dried up before is reaches the sea. As they approach the coast, the land gets more saline, and they pass oil derricks on all sides, along with a few refineries and other chemical plants. Nothing much grows on the bare earth. But then they turn off toward Yellow River Mouth Nature Reserve, and when they pile off the bus, they look out on wetlands alive with egrets, shorebirds, and the occasional golden eagle. They are all snapping pictures as fast as

they can, even though only the rich kids with their telephoto lenses will be able to get close enough to take good pictures of the birds.[3]

[3] The story of Lishui was partly inspired by the Yellow River Decade Project (China Green News 2010). The restoration plan comes from Fang 2010.