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Brno 2014



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

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Martin Drápela

**Masarykova univerzita
Brno 2014**



evropský
sociální
fond v ČR



EVROPSKÁ UNIE



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



OP Vzdělávání
pro konkurenceschopnost



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

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ÚVODEM

„In fact, during early stages of my dissertation research on the linguistic characteristics of speech and writing, I spent hours counting linguistic features by hand in texts!“
Douglas Biber

Tato sbírka textů je pomocným učebním materiálem pro předmět *Úvod do syntaxe*, v němž by si studenti měli osvojit základní syntaktickou terminologii a získat prvotní zkušenosti se syntaktickým rozbořem textů v anglickém jazyce.

Sbírka je primárně koncipována jako soubor textů k syntaktickému rozboru a je rozdělena do dvou hlavních částí: korpusová část a syntaktický glosář. Korpusová část je tvořena dvěma texty, které reprezentují dvě stylové roviny: styl umělecký a styl odborný. Oba texty byly pro potřeby této sbírky zkráceny a upraveny tak, aby si do nich mohli studenti dělat meziřádkové poznámky. Tematické okruhy k práci s těmito texty jsou specifikovány zvlášť v e-learningovém systému předmětu. Základním sekundárním textem pro tyto okruhy je publikace *Longman Student Grammar of Spoken and Written English* autorského kolektivu Douglas Biber, Susan Conrad, Geoffrey Leech (Harlow: Pearson Education, 2002). Druhá část sbírky, syntaktický glosář, představuje naprosto terminologické minimum, které by si měli studenti v rámci předmětu osvojit. Jednotlivá hesla tohoto glosáře byla přejata z anglické Wikipedie, byla nicméně pro potřeby této sbírky rovněž krácena. K dalšímu rozšíření odborné terminologie je možné použít např. *A Glossary of English Grammar*, jehož autorem je Geoffrey Leech (Edinburgh: Edinburgh University Press, 2006) a v němž je na stranách 130 až 133 doporučena další studijní literatura, nebo také gramatický slovník *Oxford Dictionary of English Grammar* od autorského kolektivu Bas Aarts, Sylvia Chalker, Edmund Weiner (druhé vydání, Oxford: Oxford University Press, 2014).

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Autor

TEXTS FOR ANALYSIS

FICTION

For the Win**Part I: The gamers and their games, the workers at their work****#1**

1 In the game, Matthew's characters killed monsters, as they did
every single night. But tonight, as Matthew thoughtfully chopsticked
a dumpling out of the styrofoam clamshell, dipped it in the red hot
sauce and popped it into his mouth, his little squadron did something
5 extraordinary: they began to win.

There were eight monitors on his desk, arranged in two ranks of four,
the top row supported on a shelf he'd bought from an old lady
scrap dealer in front of the Dongmen market. She'd also sold him
the monitors, shaking her head at his idiocy: at a time when everyone
10 wanted giant, 30" screens, why did he want this collection of dinky
little 9" displays?

So they'd all fit on his desk.

Not many people could play eight simultaneous games of Svartalfheim
Warriors. For one thing, Coca Cola (who owned the game), had devoted
15 a lot of programmer time to preventing you from playing more than one
game on a single PC, so you had to somehow get eight PCs onto one
desk, with eight keyboards and eight mice on the desk, too, and room

enough for your dumplings and an ashtray and a stack of Indian comic books and that stupid war-axe that Ping gave him and his notebooks
20 and his sketchbook and his laptop and --

It was a crowded desk.

And it was noisy. He'd set up eight pairs of cheap speakers, each glued to the appropriate monitor, turned down low to the normal hum of Svartalfaheim -- the clash of axes, the roar of ice-giants,
25 the eldritch music of black elves (which sounded a lot like the demo programs on the electric keyboards his mother had spent half her life manufacturing). Now they were all making casino noise, pay off noises, as his raiding party began to clean up. The gold rolled into their accounts. He was playing trolls -- it was trolls
30 versus elves in Svartalfaheim, though there was an expansion module with light elves and some kind of walking tree -- and he'd come through an instanced dungeon that was the underground lair of a minor dark elvish princeling. The lair was only medium hard, with a lot of crappy little monsters early on, then a bunch of dark elf cannon-
35 fodder to be mown down, some traps, and then the level-boss, a wizard who had to be taken out by the spell-casters in Matthew's party while the healers healed them and the tanks killed anything that tried to attack them.

So far, so good. Matthew had run and mapped the dungeon on his second
40 night in-world, a quick reccy that showed that he could expect
to do about 400 gold's worth of business there in about 20 minutes,
which made it a pretty poor way to earn a living. But Matthew kept
very good notes, and among his notes was the fact that the very
last set of guards had dropped some mareridtbane, which was part
45 of the powerful Living Nightmare spell in the new expansion module.
There were players all over Germany, Switzerland and Denmark who were
buying mareridtbane for 800 gold per plant. His initial reccy
had netted him five plants. That brought the total expected take
from the dungeon up to 4,400 gold for 20 minutes, or 13,200 gold per
50 hour -- which, at the day's exchange, was worth about \$30, or 285
Renminbi.

Which was -- he thought for a second -- more than 71 bowls
of dumplings.

Jackpot.

55 His hands flew over the mice, taking direct control over the squad.
He'd work out the optimal path through the dungeon now, then head
out to the Huoda internet cafe and see who he could find to do runs
with him at this. With any luck, they could take -- his eyes rolled
up as he thought again -- a million gold out of the dungeon if
60 they could get the whole cafe working on it. They'd dump the gold

as they went, and by the time Coca Cola's systems administrators figured out anything was wrong, they'd have pulled almost \$3000 out of the game. That was a year's rent, for one night's work. His hands trembled as he flipped open a notebook to a new page and began to take
65 notes with his left hand while his right hand worked the game.

He was just about to close his notebook and head for the cafe -- he needed more dumplings on the way, could he stop for them? Could he afford to? But he needed to eat. And coffee. Lots of coffee -- when the door splintered and smashed against the wall bouncing back
70 before it was kicked open again, admitting the cold fluorescent light from outside into his tiny cave of a room. Three men entered his room and closed the door behind them, restoring the dark. One of them found the lightswitch and clicked it a few times without effect, then cursed in Mandarin and punched Matthew in the ear so hard his head
75 spun around on his neck, contriving to bounce off the desk. The pain was blinding, searing, sudden.

"Light," one of the men commanded, his voice reaching Matthew through the high-pitched whine of his ringing ear. Clumsily, he fumbled for the desk-lamp behind the Indian comics, knocked it over, and then
80 one of the men seized it roughly and turned it on, shining it full on Matthew's face, making him squint his watering eyes.

"You have been warned," the man who'd hit him said. Matthew couldn't see him, but he didn't need to. He knew the voice, the unmistakable Wenjhou accent, almost impossible to understand. "Now, another
85 warning." There was a snick of a telescoping baton being unfurled and Matthew flinched and tried to bring his arms up to shield his head before the weapon swung. But the other two had him by the arms now, and the baton whistled past his ear.

But it didn't smash his cheekbone, nor his collarbone. Rather,
90 it was the screen before him that smashed, sending tiny, sharp fragments of glass out in a cloud that seemed to expand in slow motion, peppering his face and hands. Then another screen went. And another. And another. One by one, the man dispassionately smashed all eight screens, letting out little smoker's grunts
95 as he worked. Then, with a much bigger, guttier grunt, he took hold of one end of the shelf and tipped it on its edge, sending the smashed monitors on it sliding onto the floor, taking the comics, the clamshell, the ashtray, all of it sliding to the narrow bed that was jammed up against the desk, then onto the floor in a crash as
100 loud as a basketball match in a glass factory.

Matthew felt the hands on his shoulders tighten and he was lifted out of his chair and turned to face the man with the accent, the man who had worked as the supervisor in Mr Wing's factory, almost always

silent. But when he spoke, they all jumped in their seat, never sure
105 of whether his barely contained rage would break, whether someone
would be taken off the factory floor and then returned to the dorm
that night, bruised, cut, sometimes crying in the night for parents
left behind back in the provinces.

The man's face was calm now, as though the violence against
110 the machines had scratched the unscratchable itch that made him
clench and unclench his fists at all times. "Matthew, Mr Wing wants
you to know that he thinks of you as a wayward son, and bears
you no ill will. You are always welcome in his home. All you need
to do is ask for his forgiveness, and it will be given." It was
115 the longest speech Matthew had ever heard the man give, and it was
delivered with surprising tenderness, so it was quite a surprise
when the man brought his knee up into Matthew's balls, hard enough
that he saw stars.

The hands released him and he slumped to the floor, a strange sound
120 in his ears that he realized after a moment must have been his voice.
He was barely aware of the men moving around his tiny room as
he gasped like fish, trying to get air into his lungs, air enough
to scream at the incredible, radiant pain in his groin.

But he did hear the horrible electrical noise as they tasered
125 the box that held his computers, eight PCs on eight individual

boards, stuck in a dented sheet-metal case he'd bought from the same old lady. The ozone smell afterwards sent him whirling back to his grandfather's little flat, the smell of the dust crisping on the heating coil that the old man only turned on when he came
130 to visit. He did hear them gather up his notebooks and tread heavily on the PC case, and pull the shattered door shut behind them. The light from the desk lamp painted a crazy oval on the ceiling that he stared at for a long time before he got to his feet, whimpering at the pain in his balls.

135 The night guard was standing at the end of the corridor when he limped out into the night. He was only a boy, even younger than Matthew -- sixteen, in a uniform that was two sizes too big for his skinny chest, a hat that was always slipping down over his eyes, so he had to look up from under the brim like a boy wearing
140 his father's hat.

"You OK?" the boy said. His eyes were wide, his face pale.

Matthew patted himself down, wincing at the pain in his ear, the shooting stabbing feeling in his neck.

"I think so," he said.

145 "You'll have to pay for the door," the guard said.

"Thanks," Matthew said. "Thanks so much."

"It's OK," the boy said. "It's my job."

Matthew clenched and unclenched his fists and headed out
into the Shenzhen night, limping down the stairs and into the neon
150 glow. It was nearly midnight, but Jiabin Road was still throbbing
with music, food and hawkers and touts, old ladies chasing
foreigners down the street, tugging at their sleeves and offering
them "beautiful young girls" in English. He didn't know where he was
going, so he just walked, fast, fast as he could, trying to walk off
155 the pain and the enormity of his loss. The computers in his room
hadn't cost much to build, but he hadn't had much to begin with.
They'd been nearly everything he owned, save for his comics,
a few clothes -- and the war-axe. Oh, the war-axe. That was
an entertaining vision, picking it up and swinging it over his head
160 like a dark elf, the whistle of its blade slicing the air, the meaty
thunk as it hit the men.

He knew it was ridiculous. He hadn't been in a fight since
he was ten years old. He'd been a vegetarian until last year!
He wasn't going to hit anyone with a war axe. It was as useless as
165 his smashed computers.

Gradually, he slowed his pace. He was out of the central area around
the train station now, in the outer ring of the town center, where
it was dark and as quiet as it ever got. He leaned against the steel

shutters over a grocery market and put his hands on his thighs and
170 let his sore head droop.

Matthew's father had been unusual among their friends -- a Cantonese
who succeeded in the new Shenzhen. When Premier Deng changed
the rules so that the Pearl River Delta became the world's factory,
his family's ancestral province had filled overnight with people
175 from the provinces. They'd "jumped into the sea" -- left safe
government factory jobs to seek their fortune here on the south
Chinese coast -- and everything had changed for Matthew's
family. His grandfather, a Christian minister who'd been sent
to a labor camp during the Cultural Revolution -- had never made
180 the adjustment, a problem that struck many of the native Cantonese,
who seemed to stand still as the outsiders raced past them to become
rich and powerful.

But not Matthew's father. The old man had started off as a driver
for a shoe-factory boss -- learning to drive on the job, nearly
185 cracking up the car more than once, though the owner didn't seem
to mind. After all, he'd never ridden in a car before he'd made
it big in Shenzhen. But he got his break one day when the pattern-
maker was too sick to work and all production ceased while the girls
who worked on the line argued about the best way to cut the leather
190 for a new order that had come in.

Matthew's father loved to tell this story. He'd heard the argument go back and forth for a day as the line jerked along slowly, and he'd sat on his chair and thought, and thought, and then he'd stood up and closed his eyes and pictured the calm ocean until the thunder
195 of his heartbeat slowed to a normal beat. Then he'd walked into the owner's office and said, "Boss, I can show you how to cut those hides."

It was no easy task. The hides were all slightly different shapes -- cows weren't identical, after all -- and parts of them were higher
200 grade than others. The shoe itself, an Italian men's loafer, needed six different pieces for each side, and only some of them were visible. The parts that were inside the shoe didn't need to come from the finest leather, but the parts outside did. All this Matthew's father had absorbed while sitting in his chair and listening
205 to the arguments. He'd always loved to draw, always had a good head for space and design.

And before his boss could throw him out of the office, he'd plucked up his courage and seized a pen off the desk and rooted a crumpled cigarette package out of the trash -- expensive foreign cigarettes,
210 affected by all the factory owners as a show of wealth -- torn it open and drawn a neat cowhide, and quickly shown how the shoes

could be fit to the hide with a minimum of wastage, a design that would get ten pairs of shoes per hide.

"Ten?" the boss said.

215 "Ten," Matthew's father said, proudly. He knew that the most that Master Yu, the regular cutter, ever got out of a hide was nine. "Eleven, if you use a big hide, or if you're making small shoes." "You can cut this?"

Now, before that day, Matthew's father had never cut a hide
220 in his life, had no idea how to slice the supple leather that came back from the tanner. But that morning he'd risen two hours early, before anyone else was awake, and he'd taken his leather jacket, a graduation present from his own father that he'd owned and treasured for ten years, and he'd taken the sharpest knife
225 in the kitchen, and he'd sliced the jacket to ribbons, practicing until he could make the knife slice the leather in the same reliable, efficient arcs that his eyes and mind could trace over them.

"I can try," he said, with modesty. He was nervous about his boldness. His boss wasn't a nice man, and he'd fired many
230 employees for insubordination. If he fired Matthew's father, he would be out a job and a jacket. And the rent was due, and the family had no savings.

The boss looked at him, looked at the sketch. "OK, you try."

And that was the day that Matthew's father stopped being Driver Fong
235 and became Master Fong, the junior cutter at the Infinite Quality
Shoe Factory. Less than a year later, he was the head cutter, and
the family thrived.

Matthew had heard this story so many times growing up that he could
recite it word-for-word with his father. It was more than a story:
240 it was the family legend, more important than any of the history he'd
learned in school. As stories went, it was a good one, but Matthew
was determined that his own life would have an even better story
still. Matthew would not be the second Master Fong. He would be Boss
Fong, the first -- a man with his own factory, his own fortune.

245 And like his father, Matthew had a gift.

Like his father, Matthew could look at a certain kind of problem
and see the solution. And the problems Matthew could solve involved
killing monsters and harvesting their gold and prestige items, better
and more efficiently than anyone else he'd ever met or heard of.

250 Matthew was a gold farmer, but not just one of those guys who found
themselves being approached by an Internet cafe owner and offered
seven or eight RMB to keep right on playing, turning over all
the gold they won to the boss, who'd sell it on by some mysterious
process. Matthew was Master Fong, the gold farmer who could run
255 a dungeon once and tell you exactly the right way to run it again

to get the maximum gold in the minimum time. Where a normal farmer might make 50 gold in an hour, Matthew could make 500. And if you watched Matthew play, you could do it too.

Mr Wing had quickly noticed Matthew's talent. Mr Wing didn't like
260 games, didn't care about the legends of Iceland or England or India
or Japan. But Mr Wing understood how to make boys work. He displayed
their day's take on big boards at both ends of his factory, treated
the top performers to lavish meals and baijiu parties in private
rooms at his karaoke club where there were beautiful girls.

265 Matthew remembered these evenings through a bleary haze: a girl
on either side of him on a sofa, pressed against him, their perfume
in his nose, refilling his glass as Mr Wing toasted him for a hero,
extolling his achievements. The girls oohed and aahed and pressed
harder against him. Mr Wing always laughed at him the next day,
270 because he'd pass out before he could go with one of the girls
into an even more private room.

Mr Wing made sure all the other boys knew about this failing, made
sure that they teased "Master Fong" about his inability to hold
his liquor, his shyness around girls. And Matthew saw exactly what
275 Boss Wing was doing: setting Matthew up as a hero, above his friends,
then making sure that his friends knew that he wasn't that much
of a hero, that he could be toppled. And so they all farmed gold

harder, for longer hours, eating dumplings at their computers and shouting at each other over their screens late into the night and
280 the cigarette haze.

The hours had stretched into days, the days had stretched into months, and one day Matthew woke up in the dorm room filled with farts and snores and the smell of 20 young men in a too-small room, and realized that he'd had enough of working for Boss Wing.
285 That was when he decided that he would become his own man. That was when he set out to be Boss Fong.

#2

1 Wei-Dong Rosenbaum woke one minute before his alarm rang, the glowing numbers showing 12:59. 1AM in Los Angeles, 6PM in China, and it was time to go raiding.

He wiped the sleep out of his eyes and climbed out of his narrow bed
5 -- his mom still put his goddamned Spongebob sheets on it, so he'd drawn beards and horns and cigarettes on all the faces in permanent marker -- and crossed silently to his school-bag and retrieved his laptop, then felt around on his desk for the little Bluetooth earwig, screwing it into his ear.

10 He made a pile of pillows against the headboard and sat cross-legged against them, lifting the lid and firing up his gamespy, looking for his buds, all the way over there in Shenzhen. As the screen filled with names and the games they could be found in, he smiled to himself. It was time to play.

15 Three clicks later and he was in Savage Wonderland, spawning on his clockwork horse with his sword in his hand, amid the garden of talking, hissing flowers, ready to do battle. And there were his boys, riding up alongside of him, their clockwork mounts snorting and champing for battle.

20 "Ni hao!" he said into his headset, in as loud a whisper as
he dared. His father had a bladder problem and he got up all night
long and never slept very deeply. Wei-Dong couldn't afford that.
If his parents caught him at it one more time, they'd take away
his computer. They'd ground him. They'd send him to a military
25 academy where they shaved your head and you got beaten up
in the shower because it built character. He'd been treated to all
these threats and more, and they'd made an impression on him.
Not enough of an impression to get him to stop playing games
in the middle of the night, of course.

30 "Ni hao!" he said again. There was laughter, distant and flanged
by network churn.

"Hello, Leonard," Ping said. "You are learning your Chinese well,
I see." Ping still called him Leonard, but at least he was talking
in Mandarin to him now, which was a big improvement. The guys
35 normally liked to practice their English on him, which meant
he couldn't practice his Chinese on them.

"I practice," he said.

They laughed again and he knew that he'd gotten something wrong.
The intonation. He was always getting it wrong. He'd say, "I'll go
40 aggro those demons and you buff the cleric," and it would come out,

"I am a bowl of noodles, I have beautiful eyelashes." But he was getting better. By the time he got to China, he'd have it nailed.

"Are we raiding?" he said.

"Yes!" Ping said, and the others agreed. "We just need to wait
45 for the gweilo." Wei-Dong loved that he wasn't the gweilo anymore. Gweilo meant "foreign devil," and technically, he qualified. But he was one of the raiders now, and the gweilos were the paying customers who shelled out good dollars or euros or rupees or pounds to play alongside of them.

50 Here was the gweilo now. You could tell because he frequently steered his horse off the path and into the writhing grasp of the living plants, having to stop over and over to hack away their grasping vines. After watching this show for a minute or two, he rode out and cast a protection spell around them both, and the vines sizzled
55 on the glowing red bubble that surrounded them both.

"Thanks," the gweilo said.

"No problem," he said.

"Woah, you speak English?" The gweilo had a strong New Jersey accent.

"A little," Wei-Dong said, with a smile. Better than you, dummy,
60 he thought.

"OK, let's do this thing," the gweilo said, and the rest of the party caught up with them.

The gweilo had paid them to raid an instance of The Walrus's Garden, a pretty hard underwater dungeon that had some really good drops in it -- ingredients for potions, some pretty good weapons, and, of course, lots of gold. There were a couple prestige items that dropped there, albeit rarely -- you could get a vorpal blade and helmet if you were very lucky. The deal was, the gweilo paid them to run the instance with him, and he could just hang back and let the raiders do all the heavy lifting, but he'd come forward to deal the coup de grace to any big bosses they beat down, so he'd get the experience points. He got to keep the gold, the weapons, the prestige items, all of it -- and all for the low, low cost of \$75. The raiders got the cash, the gweilo got to level up fast and pick up a ton of treasure.

Wei-Dong often wondered what kind of person would pay strangers to help them get ahead in a game? The usual reason that gweilos gave for hiring raiders was that they wanted to play with their friends, and their friends were all more advanced than them. But Wei-Dong had joined games after his friends and being the noob in his little group, he'd just asked his buds to take him raiding with them, twinkling him until his character was up to their level. So if this gweilo had so many pals in this game that he wanted to level up to meet them, why couldn't he get them to power-level his character up with them? Why was he paying the raiders?

85 Wei-Dong suspected that it was because the guy had no friends.
"Goddamn would you look at that?" It was at least the tenth time
the guy had said it in ten minutes as they rode to the seashore.
This time it was the tea-party, a perpetual melee that was a blur
of cutlery whistling through the air, savage chairs roaming
90 in packs, chasing luckless players who happened to aggro them,
and a crazy-hard puzzle in which you had to collect and arrange
the crockery just so, stunning each piece so that it wouldn't crawl
away before you were done with it. It was pretty cool, Wei-Dong
had to admit (he'd solved the puzzle in two days of hard play, and
95 gotten the teapot for his trouble, which he could use to summon
genies in moments of dire need). But the gweilo was acting like he'd
never seen computer graphics, ever.

They rode on, chattering in Chinese on a private channel. Mostly,
it was too fast for Wei-Dong to follow, but he caught the gist of it.

100 They were talking about work -- the raids they had set up for the rest
of the night, the boss and his stupid rules, the money and what they'd
do with it. Girls. They were always talking about girls.

At last they were at the seaside, and Wei-Dong cast the Red Queen's
Air Pocket, using up the last of his oyster shells to do so.

105 They all dismounted, flapping their gills comically as they sloshed
into the water ("Goddamn," breathed the gweilo).

The Walrus's Garden was a tricky raid, because it was different every time you ran it, the terrain regenerating for each party. As the spellcaster, Wei-Dong's job was to keep the lights on and the air flowing so that no matter what came, they'd see it in time to prepare and vanquish it. First came the octopuses, rising from the bottom with a puff of sand, sailing through the water toward them. Lu, the tank, positioned himself between the party and the octopuses, and, after thrashing around and firing a couple of missiles at them to aggro them, went totally still as, one after another, they wrapped themselves around him, crushing him with their long tentacles, their faces crazed masks of pure malevolence.

Once they were all engrossed in the tank, the rest of the party swarmed them, the four of them drawing their edged weapons with a watery and going to work in a writhing knot. Wei-Dong kept a close eye on the tank's health and cast his healing spells as needed. As each octopus was reduced to near death, the raiders pulled away and Wei-Dong hissed into his mic, "Finish him!" The gweilo fumbled around for the first two beasts, but by the end, he was moving efficiently to dispatch them.

"That was sick," the gweilo said. "Totally badass! How'd that guy absorb all that damage, anyway?"

"He's a tank," Wei-Dong said. "Fighter class, heavy armor. Lots of buffs. And I was keeping up the healing spells the whole time."

130 "I'm fighter class, aren't I?"

You don't know? This guy had a lot more money than brains, that was for sure.

"I just started playing. I'm not much of a gamer. But you know, all my friends --"

135 I know, Wei-Dong thought. All the cool kids you knew were doing it, so you decided you had to keep up with them. You don't have any friends -- yet. But you think you will, if you play. "Sure," he said. "Just stick close, you're doing fine. You'll be leveled up by breakfast time." That was another mark against the gweilo: he had

140 the money to pay for a power-leveiling session with their raiding guild, but he wasn't willing to pay the premium to do it in a decent American timezone. That was good news for the rest of the guild, sure -- it saved them having to find somewhere to do the run during daylight hours in China, when the Internet cafes were

145 filled with straights -- but it meant that Wei-Dong had to be up in the middle of the night and then drag his butt around school all the next day.

Not that it wasn't worth it.

Now they were into the crags and caves of the garden, dodging
150 the eels and giant lobsters that surged out of their holes
as they passed. Wei-Dong found some more oyster shells and
surreptitiously picked them up. Technically, they were the gweilo's
to have first refusal over, but they were needed if he was going
to keep on casting the Air Pocket, which he might have to do if
155 they kept up at this slow pace. And the gweilo didn't notice, anyway.

"You're not in China, are you?" the gweilo asked.

"Not exactly," he said, looking out the window at the sky over Orange
County, the most boring ZIP code in California.

"Where are you guys?"

160 "They're in China. Where I live, you can see the Disneyland fireworks
show every night."

"Goddamn," the gweilo said. "Ain't you got better things to do than
help some idiot level up in the middle of the night?"

"I guess I don't," he said. Mixed in behind were the guys laughing
165 and catcalling in Chinese on their channel. He grinned to hear them.

"I mean, hell, I can see why someone in China'd do a crappy job
for a rotten 75 bucks, but if you're in America, dude, you should
have some pride, get some real work!"

“And why would someone in China want to do a crappy job?” The guys
170 were listening in now. They didn’t have great English, but they spoke
enough to get by.

“You know, it’s China. There’s billions of ,em. Poor as dirt
and ignorant. I don’t blame ,em. You can’t blame ,em. It’s not
their fault. But hell, once you get out of China and get to America,
175 you should act like an American. We don’t do that kind of work.”

“What makes you think I ,got out of China’?”

“Didn’t you?”

“I was born here. My parents were born here. Their parents were born
here. Their parents came here from Russia.”

180 “I didn’t know they had Chinese in Russia.”

Wei-Dong laughed. “I’m not Chinese, dude.”

“You aren’t? Well, goddamn then, I’m sorry. I figured you were.

What are you, then, the boss or something?”

Wei-Dong closed his eyes and counted to ten. When he opened them
185 again, the carpenters had swum out of the wrecked galleon before
them, their T-squares and saws at the ready. They moved by building
wooden boxes and gates around themselves, which acted as barricades,
and they worked fast. On the land, you could burn their timbers,
but that didn’t work under the sea. Once they had you boxed in,

190 they drove long nails through boards around you. It was a grisly,
slow way to die.

Of course, they had the gweilo surrounded in a flash, and they all had
to pile on to fight them free. Xiang summoned his familiar, a boar,
and Wei-Dong spelled it its own air bubble and it set to work,
195 tearing up the planks with its tusks. When at last the carpenters
managed to kill it, it turned into a baby and floated, lifeless,
to the ocean's surface, accompanied by a ghostly weeping. Savage
Wonderland looked like it was all laughs, but it was really grim when
you got down to it, and the puzzles were hard and the big bosses were
200 really hard.

Speaking of bosses: they put down the last of the carpenters and
as they did, a swirling current disturbed the sea-bottom, kicking
up sand that settled slowly, revealing the vorpal blade and armor,
encrusted in barnacles. And the gweilo gave a whoop and a holler and
205 dove for it clumsily, as they all shouted at once for him to stop,
to wait, and then --

And then he triggered the trap that they all knew was there.

And then there was trouble.

The Jabberwock did indeed have eyes of flame, and it did make
210 a "bubbling" sound, just like it said in the poem. But the Jabberwock
did a lot more than give you dirty looks and belch. The Jabberwock

was mean, it soaked up a lot of damage, and it gave as good as it got. It was fast, too, faster than the carpenters, so one minute you could be behind it and then it would do a barrel roll -- its tail
215 like a whip, cracking and knocking back anything that got in its way -- and it would be facing you, rearing up with its spindly claws splayed, its narrow chest heaving. The jaws that bite, the claws that catch -- and once they'd caught you, the Jabberwock would beat you against the hardest surface in reach, doing insane damage while
220 you squirmed to get free. And the burbling? Not so much like burping, really: more like the sound of meat going through a grinder, a nasty sound. A bloody sound.

The first time Wei-Dong had managed to kill a Jabberwock -- after a weekend's continuous play -- he'd crashed hard and had nightmares
225 about that sound.

"Nice going, jackass," Wei-Dong said as he hammered on his keyboard, trying to get all his spells up and running without getting disemboweled by the nightmare beast before them. It had Lu and was beating the everloving piss out of him, but that was OK, it was just
230 Lu, his job was to get beaten up. Wei-Dong cast his healing spells at Lu while he swam back as fast as he could.

"Now, that's not nice," the gweilo said. "How the hell was I supposed to know --"

"You weren't. You didn't know. You don't know. That's the point.

235 That's why you hired us. Now we're going to use up all our spells and
potions fighting this thing --" he broke off for a second and hit some
more keys "-- and it's going to take days to get it all back, just
because you couldn't wait at the back like you were supposed to."

"I don't have to take this," the gweilo said. "I'm a customer,
240 dammit."

"You want to be a dead customer, buddy?" Wei-Dong said. He'd barely
had any time to talk with his guildies on the whole raid, he'd been
stuck talking to this dumb English speaker. Now the guy was mouthing
off to him. It made him want to throw his computer against the wall.

245 See what being nice gets you?

If the gweilo replied, Wei-Dong didn't hear it, because
the Jabberwock was really pouring on the heat. He was out of potions
and healing spells and Lu wasn't going to last much longer. Oh, crap.
It had Ping in its other claw now, and it was worrying at his armor
250 with a long fang, trying to peel him like a grape. He tabbed over
to his voice-chat controller and dialled up the Chinese channel
to full, tuning out the gweilo.

It was a chaos of fast, profane dialect, slangy Chinese that mixed
in curse-words from Japanese comics and Indian movies. The boys were
255 all hollering, too fast for him to get more than the sense of things.

There was Ping, though, calling for him. "Leonard! Healing!"

"I'm out!" he said, hating how this was all going. "I'm totally empty. Used it all up on Lu!"

"That's it, then," Ping said. "We're dead." They all howled

260 with disappointment. In spite of himself, Wei-Dong grinned. "You think he'll reschedule, or are we going to have to give him his money back?"

Wei-Dong didn't know, but he had a feeling that this goober wasn't going to be very cooperative if they told him that he'd gotten up

265 in the middle of the night for nothing. Even if it was his fault.

He sucked in some whistling breaths through his nose and tried

to calm down. It was almost 2AM now. In the house around him, all was silent. A car revved its engine somewhere far away, but the night was so quiet the sound carried into his bedroom.

270 "OK," he said. "OK, let me do something about this."

Every game had a couple of BFGs, Big Friendly Guns (or at least some kind of Big Gun), that were nearly impossible to get and nearly impossible to resist. In Savage Wonderland, they were also nearly impossible to re-load: the rare monster blunderbuss that you had

275 to spend months gathering parts for fired huge loads of sharpened cutlery from the Tea Party, and just collecting enough for a single

load took eight or nine hours of gameplay. Impossible to get -- impossible to load. Practically no one had one.

But Wei-Dong did. Ignoring the shouting in his headset, he backed
280 off to the edge of the blunderbuss's range and began to arm it, a laborious process of dumping all that cutlery into the muzzle. "Get in front of it," he said. "In front of it, now!"

His guildies could see what he was doing now and they were whooping triumphantly, arraying their toons around its front, occupying its
285 attention, clearing his line of fire. All he needed was one...more... second.

He pulled the trigger. There was a snap and a hiss as the powder in the pan began to burn. The sound made the Jabberwock turn its head on its long, serpentine neck. It regarded him with its burning eyes
290 and it dropped Ping and Lu to the oceanbed. The powder in the pan flared -- and died.

Misfire!

Ohcrapohcrapohcrap, he muttered, hammering, hammering on the re-arm sequence, his fingers a blur on the mouse-buttons. "Crapcrapcrapcrap."

295 The Jabberwock smiled, and made that wet meaty sound again.

Burple burble, little boy, I'm coming for you. It was the sound from his nightmare, the sound of his dream of heroism dying.

The sound of a waste of a day's worth of ammo and a night's worth of play. He was a dead man.

300 The Jabberwock did one of those whipping, rippling barrel-rolls that were its trademark. The currents buffeted him, sending him rocking from side to side. He corrected, overcorrected, corrected again, hit the re-arm button, the fire button, the re-arm button, the fire button --

305 The Jabberwock was facing him now. It reared back, flexing its claws, clicking its jaws together. In a second it would be on him, it would open him from crotch to throat and eat his guts, any second now --

Crash! The sound of the blunderbuss was like an explosion in a pots-and-pans drawer, a million metallic clangs and bangs as the sea
310 was sliced by a rapidly expanding cone of lethal, screaming metal tableware.

The Jabberwock dissolved, ripped into a slowly rising mushroom of meat and claws and leathery scales. The left side of its head ripped toward him and bounced off him, settling in the sand.

315 The water turned pink, then red, and the death-screech of the Jabberwock seemed to carom off the water and lap back over him again and again. It was a fantastic sound.

His guildies were going nuts, seven thousand miles away, screaming his name, and not Leonard, but Wei-Dong, chanting it in their

320 Internet Cafe off Jiabin Road in Shenzhen. Wei-Dong was grinning ferociously in his bedroom, basking in it.

And when the water cleared, there again were the vorpal blade and helmet in their crust of barnacles, sitting innocently on the ocean floor. The gweilo -- the gweilo, he'd forgotten all about the gweilo!

325 -- moved clumsily toward it.

"I don't think so," said Ping, in pretty good English. His toon moved so fast that the gweilo probably didn't even see him coming. Ping's sword went snicker-snack, and the gweilo's head fell to the sand, a dumb, betrayed expression on its face.

330 "What the --"

Wei-Dong dropped him from the chat.

"That's your treasure, brother," Ping said. "You earned it."

"But the money --"

335 "We can make the money tomorrow night. That was killer, dude!" It was one of Ping's favorite English phrases, and it was the highest praise in their guild. And now he had a vorpal blade and helmet. It was a good night.

They surfaced and paddled to shore and conjured up their mounts again and rode back to the guild-hall, chatting all the way, dispatching 340 the occasional minor beast without much fuss. The guys weren't too

put out at being 75 bucks' poorer than they'd expected. They were players first, business people second. And that had been fun.

And now it was 2:30 and he'd have to be up for school in four hours, and at this rate, he was going to be lying awake

345 for a long time. "OK, I'm going to go guys," he said, in his best Chinese. They bade him farewell, and the chat channel went dead.

In the sudden silence of his room, he could hear his pulse pounding in his ears. And another sound -- a tread on the floor outside his door. A hand on the doorknob --

350 Crapcrapcrap

He managed to get the lid of the laptop down and his covers pulled up before the door opened, but he was still holding the machine under the sheets, and his father's glare from the doorway told him that he wasn't fooling anyone. Wordlessly, still glaring, his father crossed

355 the room and delicately removed the earwig from Wei-Dong's ear.

It glowed telltale blue, blinking, looking for the laptop that was now sleeping under Wei-Dong's artistically redecorated Spongebob sheets.

"Dad --" he began.

"Leonard, it's 2:30 in the morning. I'm not going to discuss

360 this with you right now. But we're going to talk about it in the morning. And you're going to have a long, long time

to think about it afterward." He yanked back the sheet and took the laptop out of Wei-Dong's now-limp hand.

"Dad!" he said, as his father turned and left the room, but
365 his father gave no indication he'd heard before he pulled the bedroom door firmly and authoritatively shut.

#3

1 Mala missed the birdcalls. When they'd lived in the village, there'd
been birdsong every morning, breaking the perfect peace of the night
to let them know that the sun was rising and the day was beginning.
That was when she'd been a little girl. Here in Mumbai, there were
5 some sickly rooster calls at dawn, but they were nearly drowned
out by the neverending trafficsong: the horns, the engines revving,
the calls late in the night.

In the village, there'd been the birdcalls, the silence, and peace,
times when everyone wasn't always watching. In Mumbai, there was
10 nothing but the people, the people everywhere, so that every breath
you breathed tasted of the mouth that had exhaled it before you got it.
She and her mother and her brother slept together in a tiny room
over Mr Kunal's plastic-recycling factory in Dharavi, the huge
squatter's slum at the north end of the city. During the day,
15 the room was used to sort plastic into a dozen tubs -- the plastic
coming from an endless procession of huge rice-sacks that were filled
at the shipyards. The ships went to America and Europe and Asia filled
with goods made in India and came back filled with garbage, plastic
that the pickers of Dharavi sorted, cleaned, melted and reformed

20 into pellets and shipped to the factories so that they could be turned
into manufactured goods and shipped back to America, Europe and Asia.

When they'd arrived at Dharavi, Mala had found it terrifying:

the narrow shacks growing up to blot out the sky, the dirt lanes
between them with gutters running in iridescent blue and red

25 from the dye-shops, the choking always-smell of burning plastic,
the roar of motorbikes racing between the buildings. And the eyes,
eyes from every window and roof, all watching them as ammaji led
her and her little brother to the factory of Mr Kunal, where
they were to live now and forevermore.

30 But barely a year had gone by and the smell had disappeared.

The eyes had become friendly. She could hop from one lane
to another with perfect confidence, never getting lost on her way
to do the marketing or to attend the afternoon classes at the little
school-room over the restaurant. The sorting work had been boring,

35 but never hard, and there was always food, and there were other girls
to play with, and ammaji had made friends who helped them out.

Piece by piece, she'd become a Dharavi girl, and now she looked
on the newcomers with a mixture of generosity and pity.

And the work -- well, the work had gotten a lot better, just lately.

40 It started when she was in the games-cafe with Yasmin, stealing
an hour after lessons to spend a few Rupees of the money she'd saved

from her pay-packet (almost all of it went to the family, of course, but ammaji sometimes let her keep some back and advised her to spend it on a treat at the cornershop). Yasmin had never played Zombie Mecha, but of course they'd both seen the movies at the little filmi house on the road that separated the Muslim and the Hindu sections of Dharavi. Mala loved Zombie Mecha, and she was good at it, too. She preferred the PvP servers where players could hunt other players, trying to topple their giant mecha-suits so that the zombies around them could swarm over it, crack open its cockpit cowl and feast on the av within.

Most of the girls at the game cafe came in and played little games with cute animals and trading for hearts and jewels. But for Mala, the action was in the awesome carnage of the multiplayer war games. It only took a few minutes to get Yasmin through the basics of piloting her little squadron and then she could get down to tactics.

That was it, that was what none of the other players seemed to understand: tactics were everything. They treated the game like it was a random chaos of screeching rockets and explosions, a confusion to be waded into and survived, as best as you could. But for Mala, the confusion was something that happened to other people. For Mala, the explosions and camera-shake and the screech

of the zombies were just minor details, to be noted among the Big
65 Picture, the armies arrayed on the battlefield in her mind.

On that battlefield, the massed forces took on a density and a color
that showed where their strengths and weaknesses were, how they were
joined to each other and how pushing on this one, over here, would
topple that one over there. You could face down your enemies head
70 on, rockets against rockets, guns against guns, and then the winner
would be the luckier one, or the one with the most ammo, or the one
with the best shields.

But if you were smart, you didn't have to be lucky, or tougher.
Mala liked to lob rockets and grenades over the opposing armies,
75 to their left and right, creating box-canyons of rubble and debris
that blocked their escape. Meanwhile, a few of her harriers
would be off in the weeds aggroing huge herds of zombies, getting
them really mad, gathering them up until they were like locusts,
blotting out the ground in all directions, leading them ever closer
80 to that box canyon.

Just before they'd come into view, her frontal force would peel
off, running away in a seeming act of cowardice. Her enemies would
be buoyed up by false confidence and give chase -- until they saw
the harriers coming straight for them, with an unstoppable,
85 torrential pestilence of zombies hot on their heels. Most times,

they were too shocked to do anything, not even fire at the harriers as they ran straight for their lines and through them, into the one escape left behind in the box-canyon, blowing the crack shut as they left. Then it was just a matter of waiting for the zombies
90 to overwhelm and devour your opponents, while you snickered and ate a sweet and drank a little tea from the urn by the cashier's counter. The sounds of the zombies rending the armies of her enemies and gnawing their bones was particularly satisfying.

Yasmin had been distracted by the zombies, the disgusting entrails,
95 the shining rockets. But she'd seen, oh yes, she'd seen how Mala's strategies were able to demolish much larger opposing armies and she got over her squeamishness.

And so on they played, drawing an audience: first the hooting derisive boys (who fell silent when they watched the armies fall before her,
100 and who started to call her "General Robotwalla" without even a hint of mockery), and then the girls, shy at first, peeking over the boys' shoulders, then shoving forward and cheering and beating their fists on the walls and stamping their feet for each dramatic victory.

It wasn't cheap, though. Mala's carefully hoarded store of Rupees
105 shrank, buffered somewhat by a few coins from other players who paid her a little here and there to teach them how to really play.

She knew she could have borrowed the money, or let some boy spend

it on her -- there was already fierce competition for the right to go over the road to the drinkswalla and buy her a masala Coke, a fizzing, foaming spicy explosion of Coke and masala spice and crushed ice that soothed the rawness at the back of her throat that had been her constant companion since they'd come to Dharavi.

But nice girls from the village didn't let boys buy them things. Boys wanted something in return. She knew that, knew it from the movies and from the life around her. She knew what happened to girls who let boys take care of their needs. There was always a reckoning.

When the strange man first approached her, she thought about nice girls and boys and what they expected, and she wouldn't talk to him or meet his eye. She didn't know what he wanted, but he wasn't going to get it from her. So when he got up from his chair by the cashier as she came into the cafe, rose and crossed to intercept her with his smart linen suit and good shoes and short, neatly oiled hair, and small moustache, she'd stepped around him, stepped past him, pretended she didn't hear him say, "Excuse me, miss," and "Miss? Miss? Please, just a moment of your time."

But Mrs Dibyendu, the owner of the cafe, shouted at her, "Mala, you listen to this man, you listen to what he has to say to you. You don't be rude in my shop, no you don't!" And because Mrs Dibyendu was also from a village, and because her mother had said that Mala

130 could play games but only in Mrs Dibyendu's cafe, Mrs Dibyendu being
the sort of person you could trust not to allow improper doings,
or drugs, or violence, or criminality, Mala stopped and turned
to the man, silent, expecting.

"Ah," he said. "Thank you." He nodded to Mrs Dibyendu. "Thank you."

135 He turned back to her, and to the army of boys and girls who'd
gathered around her, her army, the ones who called her General
Robotwallah and meant it.

"I hear that you are a very good player," he said. Mala wagged
her chin back and forth, half-closing her eyes, letting her chin

140 say, Yes, I'm a good player, and I'm good enough that I don't need
to boast about it.

"Is she a good player?"

Mala turned to her army, who had the discipline to remain silent
until she gave them the nod. She wagged her chin at them: go on.

145 And they erupted in an enthused babble, extolling the virtues
of their General Robotwallah, the epic battles they'd fought and won
against impossible odds.

"I have some work for good players."

Mala had heard rumors of this. "You represent a league?"

150 The man smiled a little smile and shook his head. He smelled of citrusy
cologne and betel, a sweet combination of smells she'd never smelled

before. "No, not a league. You know that in the game, there are players who don't play for fun? Players who play to make money?"

"The kind of money you're offering to us?"

155 His chin waggled and he chuckled. "No, not exactly. There are players who play to build up game-money, which they sell on to other players who are too lazy to do the playing for themselves."

Mala thought about this for a moment. The containers went out of India filled with goods and came back filled with garbage

160 for Dharavi. Somewhere out there, in the America of the filmi shows, there was a world of people with unimaginable wealth. "We'll do it," she said. "I've already got more credits than I can spend. How much do they pay for them?"

Again, the chuckle. "Actually," he said, then stopped. Her army was
165 absolutely silent now, hanging on his every word. From the machines came the soft crashing of the wars, taking place in the world inside the network, all day and all night long. "Actually, that's not exactly it. We want you and your friends to destroy them, kill their avs, take their fortunes."

170 Mala thought for another instant, puzzled. Who would want to kill these other players? "You're a rival?"

The man waggled his chin. Maybe yes, maybe no.

She thought some more. "You work for the game!" she said. "You work for the game and you don't want --"

175 "Who I work for isn't important," the man said, holding up his fingers. He wore a wedding ring on one hand, and two gold rings on the other. He was missing the top joints on three of his fingers, she saw. That was common in the village, where farmers were always getting caught in the machines. Here was a man from a village, a man
180 who'd come to Mumbai and become a man in a neat suit with a neat mustache and gold rings glinting on what remained of his fingers. Here was the reason her mother had brought them to Dharavi, the reason for the sore throat and the burning eyes and the endless work over the plastic-sorting tubs.

185 "What's important is that we would pay you and your friends --"
"My army," she said, interrupting him without thinking. For a moment his eyes flashed dangerously and she sensed that he was about to slap her, but she stood her ground. She'd been slapped plenty before. He snorted once through his nose, then went on.

190 "Yes, Mala, your army. We would pay you to destroy these players. You'd be told what sort of mecha they were piloting, what their player-names were, and you'd have to root them out and destroy them. You'd keep all their wealth, and you'd get Rupees, too."
"How much?"

195 He made a pained expression, like he had a little gas. "Perhaps we should discuss that in private, later? With your mother present?"

Mala noticed that he didn't say, "Your parents," but rather, "Your mother." Mrs Dibyendu and he had been talking, then. He knew about Mala, and she didn't know about him. She was just a girl

200 from the village, after all, and this was the world, where she was still trying to understand it all. She was a general, but she was also a girl from the village. General Girl From the Village.

So he'd come that night to Mr Kunal's factory, and Mala's mother had fed him thali and papadams from the women's papadam collective, and
205 they'd boiled chai in the electric kettle and the man had pretended that his fine clothes and gold belonged here, and had squatted back on his heels like a man in the village, his hairy ankles peeking out over his socks. No one Mala knew wore socks.

"Mr Banerjee," ammaji said, "I don't understand this, but I know
210 Mrs Dibyendu. If she says you can be trusted..." She trailed off, because really, she didn't know Mrs Dibyendu. In Dharavi, there were many hazards for a young girl. Ammaji would fret over them endlessly while she brushed out Mala's hair at night, all the ways a girl could find herself ruined or hurt here. But the money.

215 "A lakh of rupees every month," he said. "Plus a bonus. Of course, she'll have to pay her ,army' --" he'd given Mala a little chin waggle at that, see, I remember "-- out of that. But how much would be up to her."

"These children wouldn't have any money if it wasn't for my Mala!" ammaji said, affronted at their imaginary grasping hands. "They're
220 only playing a game! They should be glad just to play with her!" Ammaji had been furious when she discovered that Mala had been playing at the cafe all these afternoons. She thought that Mala only played once in a while, not with every rupee and moment she had spare. But when the man -- Mr Banerjee -- had mentioned her talent
225 and the money it could earn for the family, suddenly ammaji had become her daughter's business manager.

Mala saw that Mr Banerjee had known this would happen and wondered what else Mrs Dibyendu had told him about their family.

"Ammaji," she said, quietly, keeping her eyes down in the way
230 they did in the village. "They're my army, and they need paying if they play well. Otherwise they won't be my army for long."

Ammaji looked hard at her. Beside them, Mala's little brother Gopal took advantage of their distraction to sneak the last bit of eggplant off Mala's plate. Mala noticed, but pretended she hadn't, and
235 concentrated on keeping her eyes down.

Ammaji said, "Now, Mala, I know you want to be good to your friends, but you have to think of your family first. We will find a fair way to compensate them -- maybe we could prepare a weekly feast for them here, using some of the money. I'm sure
240 they could all use a good meal."

Mala didn't like to disagree with her mother, and she'd never done so in front of strangers, but --

But this was her army, and she was their general. She knew what made them tick, and they'd heard Mr Banerjee announce that she
245 would be paid in cash for their services. They believed in fairness. They wouldn't work for food while she worked for a lakh (a lakh -- 100,000 rupees! The whole family lived on 200 rupees a day!) of cash.

"Ammaji," she said, "it wouldn't be right or fair." It occurred to Mala that Mr Banerjee had mentioned the money in front
250 of the army. He could have been more discreet. Perhaps it was deliberate. "And they'd know it. I can't earn this money for the family on my own, Ammaji."

Her mother closed her eyes and breathed through her nose, a sign that she was trying to keep hold of her temper. If Mr Banerjee hadn't
255 been present, Mala was sure she would have gotten a proper beating, the kind she'd gotten from her father before he left them, when

she was a naughty little girl in the village. But if Mr Banerjee wasn't here, she wouldn't have to talk back to her mother, either.

"I'm sorry for this, Mr Banerjee," Ammaji said, not looking at Mala.

260 "Girls of this age, they become rebellious -- impossible."

Mala thought about a future in which instead of being General Robotwallah, she had to devote her life to begging and bullying her army into playing with her so that she could keep all the money they made for her family, while their families went hungry and

265 their mothers demanded that they come home straight from school. When

Mr Banerjee mentioned his gigantic sum, it had conjured up a vision of untold wealth, a real house, lovely clothes for all of them, Ammaji free to spend her afternoons cooking for the family and resting out of the heat, a life away from Dharavi and the smoke and

270 the stinging eyes and sore throats.

"I think your little girl is right," Mr Banerjee said, with quiet authority, and Mala's entire family stared at him, speechless.

An adult, taking Mala's side over her mother? "She is a very good leader, from what I can see. If she says her people need

275 paying, I believe that she is correct." He wiped at his mouth

with a handkerchief. "With all due respect, of course. I wouldn't dream of telling you how to raise your children, of course."

"Of course..." Ammaji said, as if in a dream. Her eyes were downcast, her shoulders slumped. To be spoken to this way, 280 in her own home, by a stranger, in front of her children! Mala felt terrible. Her poor mother. And it was all Mr Banerjee's fault: he'd mentioned the money in front of her army, and then he'd brought her mother to this point --

"I will find a way to get them to fight without payment, Ammaji 285 --" But she was cut short by her mother's hand, coming up, palm out to her.

"Quiet, daughter," she said. "If this man, this gentleman, says you know what you're doing, well, then I can't contradict him, can I? I'm just a simple woman from the village. I don't understand these 290 things. You must do what this gentleman says, of course."

Mr Banerjee stood and smoothed his suit back into place with the palms of his hands. Mala saw that he'd gotten some chana on his shirt and lapel, and that made her feel better somehow, like he was a mortal and not some terrible force of nature who'd come 295 to destroy their little lives.

He made a little namaste at Ammaji, hands pressed together at his chest, a small hint of a bow. "Good night, Mrs Vajpayee. That was a lovely supper. Thank you." he said. "Good night, General Robotwallah. I will come to the cafe tomorrow at three o'clock

300 to talk more about your missions. Good night, Gopal," he said, and her brother looked up at him, guiltily, eggplant still poking out of the corner of his mouth.

Mala thought that Ammaji might slap her once the man had left, but they all went to bed together without another word, and Mala snuggled
305 up to her mother the same as she did every night, stroking her long hair. It had been shining and black when they left the village, but a year later, it was shot through with grey and it felt wiry. Ammaji's hand caught hers and stilled it, the callouses on her fingers rough. "Sleep, daughter," she murmured. "You have an important job, now.
310 You need your sleep."

The next morning, they avoided one another's eyes, and things were hard for a week, until she brought home her first pay-packet, folded carefully in the sole of her shoe. Her army had carved through the enemy forces like the butcher's cleaver parting heads
315 from chickens. There had been a large bonus in their pay-packet, and even after she'd paid Mrs Dibyendu and bought everyone masala Coke at the Hotel Hajj next door, and paid the army their wages, there was almost 2,000 rupees left, and she took Ammaji into the smallest sorting room in the loft of the factory, up the ladder. Ammaji's eyes
320 lit up when she saw the money, and she'd kissed Mala on the forehead and taken her in the longest, fiercest hug of their lives together.

And now it was all wonderful between them. Ammaji had begun to look for a place for them further towards the middle of Dharavi, the old part where the tin and scrap buildings had been gradually replaced
325 with brick ones, where the potters' kilns smoked a clean woodsmoke instead of the dirty, scratchy plastic smoke near Mr Kunal's factory. Mala had new school-clothes, new shoes, and so did Gopal, and Ammaji had new brushes for her hair and a new sari that she wore after her work-day was through, looking pretty and young, the way Mala
330 remembered her from the village.

And the battles were glorious.

She entered the cafe out of the melting, dusty sun of late day and stood in the doorway. Her army was already assembled, practicing on their machines, passing gupshup in the shadows of the dark, noisy
335 room, or making wet eyes at one another through the dim. She barely had time to grin and then hide the grin before they noticed her and climbed to their feet, standing straight and proud, saluting her. She didn't know which one of them had begun the saluting business. It had started as a joke, but now it was serious. They vibrated
340 at attention, all eyes on her. They had on better clothes, they looked well-fed. General Robotwallah was leading her army to victory and prosperity.

"Let's play," she said. In her pocket, her handphone had the latest message from Mr Banerjee with the location of the day's target.

345 Yasmin was at her usual place, at Mala's right hand, and at her left sat Fulmala, who had a bad limp from a leg that she'd broken and that hadn't healed right. But Fulmala was smart and fast, and she grasped the tactics better than anyone in the cafe except Mala herself. And Yasmin, well, Yasmin could make the boys behave, which
350 was a major accomplishment, since left to their own they liked to squabble and one-up each other, in a reckless spiral that always ended badly. But Yasmin could talk to them in a way that was stern like an older sister, and they'd fall into line.

Mala had her army, her lieutenants, and her mission. She had
355 her machine, the fastest one in the cafe, with a bigger monitor than any of the others, and she was ready to go to war.

She touched up her displays, rolled her head from side to side, and led her army to battle again.

#4

1 Gold. It's all about gold.

But not regular gold, the sort of thing you dig out of the ground.

That stuff was for the last century. There's not enough of it,

for one thing: all the gold ever dug out of the ground in the history

5 of the world would only amount to a cube whose sides were the length

of a tennis court. And curiously, there's also too much of it: all

the certificates of gold ownership issued into the world add up

to a cube twice that size. Some of those certificates don't amount

to anything -- and no one knows which ones. No one has independently

10 audited Fort Knox since 1956 FCK. For all we know, it's empty,

the gold smuggled out and sold, put in a vault, sold as certificates,

then stolen again and put into another vault, used as the basis

for more certificates.

Not regular gold.

15 Virtual gold.

Call it what you want: in one game it's called "Credits," in another,

"Volcano Bucks." There are groats, Disney Dollars, cowries, moolah,

and Fool's Gold, and a million other kinds of gold out there. Unlike

real gold, there's no vault of reserves backing the certificates.

20 Unlike money, there's no government involved in their issue.

Virtual gold is issued by companies. Game companies. Game companies who declare, "So many gold pieces can buy this piece of armor," or "So many credits can buy this space ship" or "So much Jools can buy this zeppelin." And because they say it, it is true. Countries and their banks have to mess around with the ugly business of convincing citizens to believe what they say: the government may say, "This social security check will provide for all your needs in a month," but that doesn't mean that the merchants who supply those needs will agree.

30 Companies don't have this problem. When Coca Cola says that 76 goats will buy you one dwarvish axe in Svartalfaheim Warriors, that's it: the price of an axe is 76 goats. Don't like it? Go play somewhere else.

35 Virtual money isn't backed by gold or governments: it's backed by fun. So long as a game is fun, players somewhere will want to buy into it, because as fun as the game is, it's always more fun if you're one of the haves, with all the awesome armor and killer weapons, than if you're some lowly noob have-not with a dagger, fighting your way up to your first sword.

40 But where there's money to be spent, there's money to be made. For some players, the most fun game of all is the game that carves them out a slice of the pie. Not all the action belongs to the giant

companies up on their tall offices and the games they make. Plenty
of us can get in on the action from down below, where the grubby
45 little people are.

Of course, this makes the companies bonkers. They're big daddy,
they know what's best for their worlds. They are in control.
They design the levels and the difficulty to make it all perfectly
balanced. They design the puzzles. They decree that light elves can't
50 talk to dark elves, that players on Russian servers can't hop onto
the Chinese servers, that it would take the average player 32 hours
to attain the Von Clausewitz drive and 48 hours to earn the Order
of the Armored Penguin. If you don't like it, you're supposed
to leave: you're not supposed to just buy your way out of it. Or if
55 you do, you should have the decency to buy it from them.

And here's a little something they won't tell you, these Gods
of the Virtual: they can't control it. Kids, crooks, and weirdos
all over the world have riddled their safe little terrarium worlds
with tunnels leading to the great outdoors. There are multiple,
60 competing interworld exchanges: want to swap out your Zombie Mecha
wealth for a fully loaded spaceship and a crew of jolly space-pirates
to crew it? Ten different gangs want your business -- they'll fix
you right up with someone else's spaceship and take your mecha, arms

and ammo into inventory for the next person who wants to immigrate
65 to Zombie Mecha from some other magical world.

And the Gods are powerless to stop it. For every barrier they put
up, there are hundreds of smart, motivated players of the Big Game
who will knock it down.

You'd think it'd be impossible, wouldn't you? After all, these aren't
70 mere games of cops and robbers, played out in real cities filled
with real people. They don't need an all-points bulletin to find
a fugitive at large: every person in the world is in the database,
and they own the database. They don't need a search warrant to find
the contraband hiding under your floorboards: the floorboards,
75 the contraband, the house and you are all in the database -- and
they own the database.

It should be impossible, but it isn't, and here's why: the biggest
sellers of gold and treasure, levels and experience in the worlds are
the game companies themselves. Oh, they don't call it power-leveling
80 and gold-farming -- they package it with prettier, more palatable
names, like "accelerated progress bonus pack" and "All Together
Now(TM)" and lots of other redonkulous names that don't fool anyone.

But the Gods aren't happy with merely turning a buck on players
who are too lazy to work their way up through the game. They've
85 got a much, much weirder game in play. They sell gold to people

who don't even play the game. That's right: if you're a bigshot finance guy and you're looking for somewhere to stash a million bucks where it will do some good, you can buy a million dollars' worth of virtual gold, hang onto it as the game grows and becomes more and more fun, as the value of the gold rises and rises, and then you can sell it back for real money through the official in-game banks, pocketing a chunky profit for your trouble.

So while you're piloting your mecha, swinging your axe or commanding your space fleet, there's a group of weird old grownups in suits in fancy offices all over the world watching your play eagerly, trying to figure out if the value of in-game gold is going to go up or down. When a game starts to suck, everyone rushes to sell out their holdings, getting rid of the gold as fast as they can before its value is obliterated by bored gamers switching to a competing service. And when the game gets more fun, well, that's an even bigger frenzy, as the bidding wars kick up to high gear, every banker in the world trying to buy the same gold for the same world.

Is it any wonder that eight of the 20 largest economies in the world are in virtual countries? And is it any wonder that playing has become such a serious business?

#5

1 Matthew stood outside the door of the Internet cafe, breathing
deeply. On the walk over, he'd managed to calm down a little, but as
he drew closer, he became more and more convinced that Boss Wing's
boys would be waiting for him there, and all his friends would
5 be curled up on the ground, beaten unconscious. He'd brought four
of the best players with him out of Boss Wing's factory, and he knew
that Boss Wing wasn't happy about that at all.

He was hyperventilating, his head swimming. He still hurt.

It felt like he had a soccer ball-sized red sun of pain burning
10 in his underwear and one of the things he wanted most and least
to do was to find a private spot to have a look in there. There was
a bathroom in the cafe, so that was that, it was time to go inside.

He walked up the four flights of stairs painfully, passing under
the gigantic murals from gamespace, avoiding the plastic plants
15 on each landing that reeked of piss from players who didn't want
to wait for the bathroom. From the third floor up, he was enveloped
in the familiar cloud of body odor, cigarette smoke and cursing
that told him he was on his way to his true home.

In the doorway, he paused and peered around, looking for any sign
20 of Boss Wing's goons, but it was business as usual: rows and rows

of tables with PCs on them, a few couples sharing machines, but mostly, it was boys playing, skinny, with their shirts rolled up over their bellies to catch any breeze that might happen through the room. There were no breezes, just the eddies in the smoke caused by the growl
25 of all those PC fans whining as they sucked particulate-laden smoky air over the superheated motherboards and monster video cards.

He slunk past the sign-in desk, staffed tonight by a new kid, someone else just arrived from the provinces to find his fortune here in bad old Shenzhen. Matthew wanted to grab the kid and carry him
30 to the city limits, explaining all the way that there was no fortune to be found here anymore, it all belonged to men like Boss Wing. Go home, he thought at the boy, Go home, this place is done.

His boys were playing at their usual table. They had made a pyramid from alternating layers of Double Happiness cigarette packs and empty
35 coffee cups. They looked up as he neared them, smiling and laughing at some joke. Then they saw the look on his face and they fell silent.

He sat down at a vacant chair and stared at their screens. They'd been playing, of course. They were always playing. When they worked in Boss Wing's factory, they'd pull an 18 hour shift and then they'd
40 relax by playing some more, running their own characters through the dungeons they'd been farming all day long. It's why Boss Wing

had such an easy time recruiting for his factory: the pitch was seductive. "Get paid to play!"

But it wasn't the same when you worked for someone else.

45 He tried to find the words to start and couldn't.

"Matthew?" It was Yo, the oldest of them. Yo actually had a family, a wife and a young daughter. He'd left Boss Wing's factory and followed Matthew.

Matthew stared at his hands, took a deep breath, and made a decision:

50 "Sorry, I just had a little fight on the way over here. I've got good news, though: I've got a way to make us all very rich in a very short time." And, from memory, Master Fong described the way he'd found into the rich dungeon of Svartalfaheim Warriors. He commandeered a computer and showed them, showed them how to shave the seconds off
55 the run, where to make sure to stop and grab and pick up. And then they each took up a machine and went to work.

In time, the ache in his pants faded. Someone gave him a cigarette, then another. Someone brought him some dumplings. Master Fong ate them without tasting them. He and his team were at work, and
60 they were making money, and someday soon, they'd have a fortune that would make Boss Wing look like a small-timer.

Sometime during the shift, his phone rang. It was his mother.

She wanted to wish him a happy birthday. He had just turned 17.

#6

1 Wei-Dong's game-suspension lasted all of 20 minutes. That's how
long it took him to fake a migraine, get a study-pass, sneak
into the resource center, beat the network filter and log on. It was
getting very late back in China, but that was OK, the boys stayed up
5 late when they were working, and they were glad to have him.

Wei-Dong's real name wasn't Wei-Dong, of course. His real name was
Leonard Rosenbaum. He'd chosen Wei-Dong after looking up the meanings
of Chinese names and coming up with Strength of the East, which
he liked the sound of. This system for picking names worked well
10 for the Chinese kids he knew -- when their parents immigrated
to the States, they'd just pick some English name and that was it.
Why not? Why was it better to pick a name because your grandfather
had it than because you liked the sound of it?

He'd tried to explain this to his parents, but it didn't make much
15 of an impression on them. They were cool with him being interested
in other cultures, but that didn't mean he could get out of having
a Bar-Mitzvah or that they would call him Wei-Dong. And it didn't
mean that they approved of him being up all night with his buds
in China, making money.

20 Wei-Dong knew that this could all be seen as very lame, an outcast
kid so desperate to make friends that he abandoned his high school
altogether and sucked up to someone in another hemisphere with free
labor instead. But it wasn't like that. Wei-Dong had plenty
of friends at Ronald Regan Secondary School. Plenty of kids thought
25 that China was the most interesting place in the world, loved
the movies and the food and the comics and the games. And there
were lots of Chinese kids in school too and while a couple clearly
thought he was weird, lots more got it. After all, most of them were
into India the way he was into China, so they had that in common.
30 And so what if he was skipping a class? It was Social Studies,
ferchrissakes! They were supposed to be studying China, but Wei-Dong
knew about ten times more about the subject than the teacher did. As
he whispered in Mandarin into his earwig, he thought that this was
like an independent study project. His teachers should be giving him
35 bonus marks.

"Now what?" he said. "What's the mission?"

"We were thinking of running the Walrus's Garden a few more times,
now that we've got it fresh in our heads. Maybe we could pick up
another vorpal blade." That's what the guys did when there weren't
40 any paying gweilos -- they went raiding for prestige items. It wasn't
the most exciting thing of all, but you never knew what might happen.

"I'm into it," he said. He had a free period after this one, then lunch, so technically he could play for three hours solid. They'd all be ready to log off and go to bed by then, anyway.

45 "You're a good gweilo, you know?" Wei-Dong knew Ping was kidding. He didn't care if the guys called him gweilo. It wasn't a racist term, not really, not like "chink" or "slant-eye." Just a term of affection. And as nicknames went, "Foreign ghost" was actually kind of cool.

50 So they hit the Garden and ran it and they did pretty well, and they went and put the money in the guild bank and went back for more. Then they did it again. Somewhere in there, the bell rang. Somewhere in there, some of his friends came and talked to him and he muted the earwig and said some things back to them, but he didn't really
55 know what he'd said. Something.

Then, on the third run, the bad thing happened. They were almost to the shore, and they'd banished their mounts. Wei-Dong was prepping the Queen's Air Pocket, dipping into the monster supply of oyster shells he'd built up on the previous runs.

60 And out they came, a dozen knights on huge, fearsome black steeds, rising out of the water in unison, rending the air with the angry chorus of their mounts and their battle-cries. The water fountained up around them and they fell upon Wei-Dong and his guildies.

He shouted something into his earwig, a warning, and all
65 around him in the resource center, kids looked up from their
conversations to stare at him. He'd become a dervish, hammering away
at his keyboard and mousing furiously, his eyes fixed on the screen.
The black riders moved with eerie synchrony. Either they were
monsters -- monsters such as Wei-Dong had never encountered -- or
70 they were the most practiced, cooperative raiding party he'd ever
seen. He had his vorpal blade out now, and his guildies were all
fighting as well. In his earwig, they cursed in the Chinese dialects
of six different provinces. Under other circumstances, Wei-Dong would
have taken notes, but now he was fighting for his life.

75 Lu had bravely taken the point between the riders and the party,
the huge tank standing fast with his mace and broadsword, engaging
all twelve of the knights without regard for his own safety. Wei-Dong
poured healing spells on him as he attempted to make his own mark
on the riders with the vorpal blade, three times as long as he was.

80 The vorpal blade could do incredible damage, but it wasn't easy
to use. Twice, Wei-Dong accidentally sliced into members of his own
party, though not badly -- thank God, or he'd never hear the end
of it -- but he couldn't get a cut in on the black knights, who were
too fast for him.

85 Then Lu fell, going down on one knee, pierced through the throat
by a pike wielded by a rider whose steed's eyes were the icy blue
of the Caterpillar's mist. The rider lifted Lu into the air, his feet
kicking limply, and another knight beheaded him with a contemptuous
swing of his sword. Lu fell in two pieces to the gritty beach sand
90 and in the earwig, he cursed them, using an expression that Wei-
Dong had painstakingly translated into "Screw eight generations
of your ancestors."

With Lu down, the rest of them were practically helpless. They fought
valiantly, coordinating their attacks, pouring on fire from their
95 magic items and best spells, but the black knights were unbeatable.
Before he died, Wei-Dong managed to hit one with the vorpal blade and
had the momentary satisfaction of watching the knight stagger and
clutch at his chest, but then the fighter closed with him, drawing
a pair of short swords that he spun like a magician doing knife
100 tricks. There was no question of parrying him, and seconds later,
Wei-Dong was in the sand, watching the knight's spiked boot descend
on his face, hearing the crunch of his cheekbones and nose shattering
under the weight. Then he was respawning in the distant Lake
of Tears, naked and unarmed, and he had to corpse-run to the body
105 of his toon before the bastards got his vorpal blade.

He heard his guildies dying in the earwig, one after another, as he ran, ghostly and ethereal, across the hills and dales of Wonderland. He reached his corpse just in time to watch the knights loot the body, and the bodies of his teammates. He rose
110 up again, helpless and unarmed and made flesh by the body of his toon, vulnerable.

One of the knights sent him a chat-request. He clicked it, silencing the background noises from Shenzhen.

"You farmers aren't welcome here anymore, Comrade," the voice said.
115 It had an accent he didn't recognize. Maybe Russian? And the speaker was just a kid! "We're patrolling now. You come back again, we'll hunt and kill you again, and again, and again. You understand me, Chineese?" Not just a kid: a girl -- a little girl, threatening him from somewhere in the world.

120 "Who put you in charge, missy?" he said. "And what makes you think I'm Chinese, anyway?"

There was a nasty laugh. "Missy, huh? I'm in charge because I just kicked your ass, and because I can kick it again, as many times as I need to. And I don't care if you're in China, Vietnam,
125 Indonesia -- it doesn't make a difference. We'll kill you and all the farmers in Wonderland. This game isn't farmable anymore. I'm

done talking to you now." And the black knight decapitated him with contemptuous ease.

He flipped back to the guild channel, ready to tell them about what
130 had just happened, his mind reeling, and that's when he looked up into the face of his father, standing over him, with a look on his face that could curdle milk.

"Get up, Leonard," he said. "And come with me."

He wasn't alone. There was Mr Adams, the vice-principal, and
135 the school's rent-a-cop, Officer Turner, and the guidance counsellor, Ms Ramirez. They presented him with the stony faces of Mount Rushmore, faces without a hint of mercy. His father reached over and took the earwig out of his ear, gently, carefully. Then, with exactly the same care, he dropped the earwig to the polished concrete floor
140 of the resource centre and brought his heel down on it, the crunch loud in the perfectly silent room.

Leonard stood up. The room was full of kids pretending not to look at him. They were all looking at him. He followed his father into the hallway and as the door swung shut, he heard, unmistakably,
145 the sound of a hundred giggles in unison.

They boxed him in on the walk to the vice-principal's office, trapping him. Not that he'd run -- he had nowhere to run to, but it still made him feel claustrophobic. This was not good. This was very, very bad.

Here's how bad it was: "You're going to send me to military school?"

150 "Not military school," Ms Ramirez said. She said
it with that maddening, patronizing guidance-counsellor tone. "The
Martindale Academy has no military or martial component. It's merely
a very structured, supervised environment. They have a fantastic
track record in helping students like you concentrate on grades and
155 pull themselves out of academic troubles. They've got a beautiful
campus in a beautiful location, and Martindale boys go on to fill many
important --"

And on and on. She'd swallowed the sales brochure like a burrito
and now it was rebounding on her. He tuned her out and looked
160 at his father. Benny Rosenbaum wasn't the sort of person you could
read easily. The people who worked for him at Rosenbaum Shipping and
Logistics called him The Wall, because you couldn't get anything past
him, under him, through him, or over him. Not that he was a hardcase,
but he couldn't be swayed by emotional arguments: if you tried
165 to approach him with anything less than fully computerized logic,
you might as well forget it.

But there were little tells, little ways you could figure out
what the weather was like in old Benny. That thing he was doing
with his watch strap, working at the catch, that was one of them.
170 So was the little jump in the hinge of his jaw, like he was chewing

an invisible wad of gum. Combine those with the fact that he was away from his work in the middle of the day, when he should be making sure that giant steel containers were humming around the globe -- well, for Leonard, it meant that the lava was pretty close to the surface
175 of Mount Benny this afternoon.

He turned to his dad. "Shouldn't we be talking about this as a family, Dad? Why are we doing this here?"

Benny regarded him, fiddled with his watch strap, nodded at the guidance counsellor and made a little "go-on" gesture
180 that betrayed nothing.

"Leonard," she said. "Leonard, you need to understand just how serious this has become. You're one term paper away from flunking two of your subjects: history and biology. You've gone from being an A student in math, English and social studies to a C-minus.

185 At this rate, you'll have blown the semester by Thanksgiving. Put it this way: you've gone from being in the ninetieth percentile of Ronald Regan Secondary School Sophomores to the twelfth. This is a signal, Leonard, from you to us, and it's signalling, S-O-S, S-O-S."

"We thought you were on drugs," his father said, absolutely calm. "We
190 actually tested a hair follicle from your pillow. I had a guy follow you around. Near as I can tell, you smoke a little pot with your friends, but you don't actually see your friends anymore, do you?"

"You tested my hair?"

His father made that go-on gesture of his, an old favorite of his.

195 "And had you followed. Of course we did. We're in charge of you.

We're responsible for you. We don't own you, but if you screw up so

bad that you end up spending the rest of your life as a bum, it'll

be down to us, and we'll have to bail you out. You understand that,

Leonard? We're responsible for you, and we'll do whatever we have

200 to in order to make sure you don't screw up your life."

Leonard bit back a retort. The sinking feeling that had started

with the crushing of his earwig had sunk as low as it would go. Now

his palms were sweating, his heart was racing, and he had no idea

what would come out of his mouth the next time he spoke.

205 "We used to call this an intervention, when I was your age,"

the vice-principal said. He still looked like the real-estate agent

he'd been before he switched to teaching, the last time the market

had crashed. He was affable, inoffensive, his eyes wide and

trustworthy. They called him Babyface Adams in the halls. But Leonard

210 knew about salesmen, knew that no matter how friendly they appeared,

they were always on the lookout for weaknesses to exploit. "And we'd

do it for drug addicts. But I don't think you're addicted to drugs.

I think you're addicted to games."

"Oh come on," Leonard said. "There's no such thing. I can show
215 you the research papers. Game addiction? That's just something
they thought up to sell newspapers. Dad, come on, you don't really
believe this stuff, do you?"

His dad pointedly refused to meet his gaze, directing his attention
to the Vice-Principal.

220 "Leonard, we know you're a very smart young man, but no one is
so smart as to never need help. I don't want to argue definitions
of addictions with you --"

"Because you'll lose." Leonard spat it out, surprising himself
with the vehemence. Old Babyface smiled his affable, salesman's
225 smile: Oh yes, good sir, you're certainly right there, very clever
of you. Now, may I show you something in a mock-Tudor split-level
with a three-car garage and an above-ground pool?

"You're a very smart young man, Leonard. It doesn't matter if
you're medically addicted, psychologically dependent, or just
230 --" he waved his hands, looking for the right words -- "or if
you just spend too darn much time playing games and not enough time
in the real world. None of that matters. What matters is that you're
in trouble. And we're going to help you with that. Because we care
about you and we want to see you succeed."

235 It suddenly sank in. Leonard knew how these things went. Somewhere,
right now, Officer Turner was cleaning out his locker and loading
its contents into a couple of paper Trader Joe's grocery sacks.
Somewhere, some secretary was taking his name off of the rolls
of each of his classes. Right now, his mother was packing
240 his suitcase back at home, filling it with three or four changes
of clothes, a fresh toothbrush -- and nothing else. When he left
this room, he'd disappear from Orange County as thoroughly as if he'd
been snatched off the street by serial killers.

Only it wouldn't be his mutilated body that would surface in a few
245 months time, decomposed and grisly, an object lesson to all
the kiddies of Ronald Reagan High to be on the alert for dangerous
strangers. It would be his mutilated personality that would surface,
a slack-jawed pod-person who'd been crammed into the happy-well-
adjusted-citizen mold that would carry him through an adulthood as
250 a good, trouble-free worker-bee in the hive.

"Dad, come on. You can't just do this to me! I'm your son! I deserve
a chance to pull my grades up, don't I? Before you send me off
to some brainwashing center?"

"You had your chance to pull your grades up, Leonard," Ms Ramirez
255 said, and the Vice-Principal nodded vigorously. "You've had all

semester. If you plan on graduating and going on to university, this is the time to do something drastic to make sure that happens.”

“It’s time to go,” his father said, ostentatiously checking his watch. Honestly, who still wore a watch? He had a phone, Leonard
260 knew, just like all normal people. An old-fashioned wind-up watch was about as useful in this day and age as an ear-trumpet or a suit of chain-mail. He had a whole case full of them -- dozens of them. His father could have all the ridiculous affectations and hobbies he wanted, spend a small fortune on them, and no one wanted to send
265 him off to the nuthouse.

It was so goddamned unfair. He wanted to shout it as they led him out to his father’s impeccable little Huawei Darter. He bought new one every year, getting a chunky discount straight from the factory, who loaded his personal car into its own container and craned
270 it into one of Dad’s big ships in port in Guangzhou. The car smelled of the black licorice sweets that Dad sucked on, and of the giant steel thermos-cup of coffee that Dad slipped into the cup-holder every morning, refilling through the day at a bunch of diners where they called him by his first name and let him run a tab.

275 And outside the windows, through the subtle grey tint, the streets of Anaheim whipped past, rows of identical houses branching off of a huge, divided arterial eight-lane road. He’d known these streets

all his life, he'd walked them, met the panhandlers that worked
the tourist trade, the footsore Disney employees who'd missed
280 the shuttle, hiking the mile to the cast-member parking, the retired
weirdos walking their dogs, the other larval Orange County pod-people
who were still too young or poor or unlucky to have a car.

The sky was that pure blue that you got in OC, no clouds, a postcard
smiley-face sun nearly at noontime high, perfect for tourist shots.
285 Leonard saw it all for the first time, really saw it, because he knew
he was seeing it for the last time.

"It's not so bad," his dad said. "Stop acting like you're going
to prison. It's a swanky boarding school, for chrissakes. And not
one of those schools where they beat you down in the bathroom or
290 anything. They're practically hippies up there. Your mother and
I aren't sending you to the gulag, kid."

"It doesn't matter what you say, Dad. Just forget it. Here's
the facts: you've kidnapped me from my school and you're sending me
away to some place where they're supposed to ,fix' me. You haven't
295 given me any say in this. You haven't consulted me. You can say how
much you love me, how much it's for my own good, talk and talk and
talk, but it won't change those facts. I'm seventeen years old,
Dad. I'm as old as Zaidy Shmuel was when he married Bubbie and came
to America, you know that?"

300 "That was during the war --"

"Who cares? He was your grandfather, and he was old enough to start a family. You can bet your ass he wouldn't have stood still for being kidnapped --" His father snorted. "Kidnapped because his hobbies weren't his parents' idea of a good time. God! What the hell is

305 the matter with you? I always knew you were kind of a prick, but --"

His father calmly steered the car to the curb and pulled over, changing three lanes smoothly, with a shoulder-check before each, weaving through the tourist traffic and gardeners' pickup trucks without raising a single horn. He popped the emergency brake with one

310 hand and his seatbelt with the other, twisting in his seat to bring his face right up to Leonard's.

"You are on thin goddamned ice, kid. You can make me the villain if you want to, if you need to, but you know, somewhere in that hormone-addled teenaged brain of yours, that this was your doing. How many

315 times, Leonard? How many times have we talked to you about balance, about keeping your grades up, taking a little time out of your game? How many chances did you get before this?"

Leonard laughed hotly. There were tears of rage behind his eyes, trying to get out. He swallowed hard. "Kidnapped," he said.

320 "Kidnapped and shipped away because you don't think I'm getting good enough grades in math and English. Like any of it matters -- when was

the last time you solved a quadratic equation Dad? Who cares if I get into a good university? What am I going to get a degree in that will help me survive the next twenty years? What did you get your degree
325 in, again, Dad? Oh, that's right, Ancient Languages. Bet that comes up a lot when you're shipping giant containers of plastic garbage from China, huh?"

His father shook his head. Behind them, cars were braking and honking at each other as they maneuvered around the stopped Huawei. "This
330 isn't about me, son. This is about you -- about pissing away your life on some stupid game. At least speaking Latin helps me understand Spanish. What are you going to make of all your hours and years of killing dragons?"

Leonard fumed. He knew the answer to this, somewhere. The games were
335 taking over the world. There was money to be made there. He was learning to work on teams. All this and more, these were the reasons for playing, and none of them were as important as the most important reason: it just felt right, adventuring in-world --

There was a particularly loud shriek of brakes from behind them,
340 and it kept coming, getting louder and louder, and there was a blare of horns, too, and the sound didn't stop, got louder than you could have imagined it getting. He turned his head to look over his shoulder and --

Crash

345 The car seemed to leap into the air, rising up first on its front
tires in a reverse-wheelie and then the front wheels spun and the car
shot forward ten yards in a second. There was the sound of crumpling
metal, his father's curse, and then a clang like temple bells as
his head bounced off the dashboard. The world went dark.

#7

1 Mala was in the world with a small raiding party, just a few
of her army. It was late -- after midnight -- and Mrs Dibyendu had
turned the cafe over to her idiot nephew to run things. These days,
the cafe stayed open when Mala and her army wanted to use it, day
5 or night, and there were always soldiers who'd vie for the honor
of escorting General Robotwallah home afterwards. Ammaji -- Ammaji
had a new fine flat, with two complete rooms, and one of them was all
for Ammaji alone, hers to sleep in without the snuffling and gruffling
of her two children. There were places in Dharavi where ten or fifteen
10 might have shared that room, sleeping on coats -- or each other.
Ammaji had a mattress, brought to her by a strong young man from Chor
Bazaar, carried with him on the roof of the Marine Line train through
the rush hour heat and press of bodies.

Ammaji didn't complain when Mala played after midnight.

15 "More, just there," Sushant said. He was two years older than
her, the tallest of them all, with short hair and a crazy smile
that reminded her of the face of a dog that has had its stomach
rubbed into ecstasy.

And there they were, three mecha in a triangle, methodically clubbing
20 zombies in the head, spattering their rotten brains and dropping them

into increasing piles. Eventually, the game would send out ghouls to drag away the bodies, but for now, they piled waist deep around the level one mechas.

25 "I have them," Yasmin said, her scopes locking on. This was a new kind of mission for them, wiping out these little trios of mecha who were grinding endlessly against the zombies. Mr Banerjee had tasked them to this after the more aggressive warriors had been hunted to extinction by their army. According to Mr Banerjee, these were each played by a single person, someone who was getting paid
30 to level up basic mecha to level four or five, to be sold at auction to rich players. Always in threes, always grinding the zombies, always in this part of the world, like vermin.

"Fire," she said, and the pulse weapons fired concentric rings of force into the trio. They froze, systems cooked, and as Mala
35 watched, the zombies swarmed over the mechas, toppling them, working relentlessly at them, until they had found their way inside. A red mist fountained into the sky as they dismembered the pilots.

"Nice one," she said, arching her back over her chair, slurping the dregs of a cup of chai that had grown cold at her side.
40 Mrs Dibyendu's idiot nephew was standing barefoot in the doorway of the cafe, spitting betel into the street, the sweet smell wafting back to her. The sleep was gathering in her mind, waiting

to pounce on her, so it was time to go. She turned to tell her army
so when her headphones filled with the thunder of incoming mechas,
45 and lots of them.

She slammed her bottom down into the seat and spun around, fingers
flying to the keyboard, eyes on the screen. The enemy mecha were
coming in locked in a megamecha configuration, fifteen -- no twenty --
of them joined together to form a bot so huge that she looked like
50 a gnat next to it.

"To me!" she cried, and "Formation," and her soldiers came to their
keyboard, her army initiating their own megamecha sequence, but
it took too long and there weren't enough of them, and though
they fought bravely, the giant enemy craft tore them to pieces,
55 lifting each warbot and peering inside its cowl as it ripped open
the armor and dropped the squirming pilot to the surging zombie tide
at its feet. Too late, Mala remembered her strategy, remembered what
it had been like when she had always commanded the weaker force,
the defensive footing she should have put her army on as soon as
60 she saw how she was outmatched.

Too late. An instant later, her own mecha was in the enemy's
clutches, lifted to its face, and as she neared it, the lights
on her console changed and a soft klaxon sounded: the bot was
attempting to infiltrate her own craft's systems, to interface

65 with them, to pwn them. That was another game within this game,
the hack-and-be-hacked game, and she was very good at it. It involved
solving a series of logic puzzles, solving them faster than the foe,
and she clicked and typed as she figured out how to build a bridge
using blocks of irregular size, as she figured out how to open a lock
70 whose tumblers had to be clicked just so to make the mechanism work,
as she figured out --

She wasn't fast enough. Her army gathered around her as her console
locked up, the enemy inside her mecha now, running it from bootloader
to flamethrower.

75 "Hello," a voice said in her headphones. That was something you could
do, when you controlled another player's armor -- you could take over
its comms. She thought of yanking out the headphones and switching
to speaker so that her army could listen in too, but some premonition
stayed her hand. This enemy had gone to some trouble to talk to her,
80 personally, so she would hear what it had to say.

"My name is Big Sister Nor," she said, and it was a she, a woman's
voice, no, a girl's voice -- maybe something in between. Her Hindi
was strangely accented, like the Chinese actors in the filmi shows
she'd seen. "It's been a pleasure to fight you. Your guild did
85 very well. Of course, we did better." Mala heard a ragged cheer and
realized that there were dozens of enemies on the chat channel, all

listening in. What she had mistaken for static on the channel was, in fact, dozens of enemies, somewhere in the world, all breathing into their microphones as this woman spoke.

90 "You are very good players," Mala said, whispering it so that only her mic heard.

"I'm not just a player, and neither are you, my dear." There was something sisterly in that voice, none of the gloating competitiveness that Mala felt for the players she'd bested in the game before.

95 In spite of herself, Mala found she was smiling a little. She rocked her chin from side to side -- Oh, you're a clever one, do go on -- and her soldiers around her made the same gesture.

"I know why you fight. You think you're doing an honest job of work, but have you ever stopped to consider why someone would pay

100 you to attack other workers in the game?"

Mala shooed away her army, making a pointed gesture toward the door.

When she was alone, she said, "Because they muck up the game for the real players. They interfere."

The giant mecha shook its head slowly. "Are you really so blind?"

105 Do you think the syndicate that pays you does so because they care about whether the game is fun? Oh, dear."

Mala's mind whirred. It was like solving one of those puzzles.

Of course Mr Banerjee didn't care about the other players. Of course

he didn't work for the game. If he worked for the game, he could
110 just suspend the accounts of the players Mala fought. Cleaner and
neater. The solution loomed in her mind's eye. "They're business
rivals, then?"

"Oh yes, you are as clever as I thought you must be. Yes indeed.
They are business rivals. Somewhere, there is a group of players
115 just like them, being paid to level up mecha, or farm gold, or
acquire land, or do any of the other things that can turn labor
into money. And who do you suppose the money goes to?"

"To my boss," she said. "And his bosses. That's how it goes."
Everyone worked for someone.

120 "Does that sound fair to you?"

"Why not?" Mala said. "You work, you make something or do something,
and the person you do it for pays you something for your work. That's
the world, that's how it works."

"What does the person who pays you do to earn his piece
125 of your labor?"

Mala thought. "He figures out how to turn the labor into money.
He pays me for what I do. These are stupid questions, you know."

"I know," Big Sister Nor said. "It's the stupid questions that have
some of the most surprising and interesting answers. Most people never
130 think to ask the stupid questions. Do you know what a union is?"

Mala thought. There were unions all over Mumbai, but none in Dharavi. She'd heard many people speak of them, though. "A group of workers," she said. "Who make their bosses pay them more." She thought about all she'd heard. "They stop other workers from taking their jobs.

135 They go on strike."

"That's what unions do, all right. But it's not much of a sense of what they are. Tell me this: if you went to your boss and asked for more money, shorter hours, and better working conditions, what do you think he'd say?"

140 "He'd laugh at me and send me away," Mala said. It was an unbelievably stupid question.

"You're almost certainly right. But what if all the workers he went to said the same thing? What if, everywhere he went, there were workers saying, 'We are worth so much,' and 'We will not be treated
145 this way,' and 'You cannot take away our jobs unless there is a just reason for doing so'? What if all workers, everywhere, demanded this treatment?"

Mala found she was shaking her head. "It's a ridiculous idea. There's always someone poor who'll take the job. It doesn't matter. It won't
150 work." She found that she was furious. "Stupid!"

"I admit that it's all rather improbable," the woman said, and there was an unmistakable tone of amusement in her voice.

"But think for a moment about your employer. Do you know where his employers are? Do you know where the players you're fighting are? 155 Where their customers are? Do you know where I am?"

"I don't see why that matters --"

"Oh, it matters. It matters because although all these people are all over the world, there's no real distance between them. We chat here like neighbors, but I am in Singapore, and you are in India. Where? 160 Delhi? Kolkata? Mumbai?"

"Mumbai," she admitted.

"You don't sound like Mumbai," she said. "You have a lovely accent. Uttar Pradesh?"

Mala was surprised to hear the state of her birth and her village 165 guessed so easily. "Yes," she said. She was a girl from the village, she was General Robotwallah and this woman had taken the measure of her very quickly.

"This game is headquartered in America, in a city called Atlanta. The corporation is registered in Cyprus, in Europe. The players 170 are all over the world. These ones that you've been fighting are in Vietnam. We'd been having a lovely conversation before you came and blew them all to pieces. We are everywhere, but we are all here. Anyone your boss ever hired to do your job would end up here, and we could find that worker and talk to them. Wherever your boss goes,

175 his workers will all come and work here. And we will have a chat like this with them, and talk to them about what a world we could have, if all workers cooperated to protect each others' interests."

Mala was still shaking her head. "They'd just blow you away. Hire an army like me. It's a stupid idea."

180 The giant metamecha lifted her up to its face, where its giant teeth champed and clanged. "Do you think there's an army that could best us?"

Mala thought that maybe her army could, if they were in force, if they were prepared. Then she thought of how much successful war

185 you'd have to persecute to win one of these giant beasts. "Maybe not. Maybe you can do what you say you can do." She thought some more. "But in the meantime, we wouldn't have any work."

The giant metal face nodded. "Yes, that's true. At first you may not find yourself with your wages. And maybe your fellow workers would

190 contribute a little to help you out. That's another thing unions do -- it's called strike pay. But eventually, you, and me, and all of us, would enjoy a world where we are paid a living wage, and where we labor under livable conditions, and where our workplaces are fair and decent. Isn't that worth a little sacrifice?"

195 There it was, "You ask me to make a sacrifice. Why should I sacrifice?
We are poor. We fight for a very little, because we have even less.
Why do you think that we should sacrifice? Why don't you sacrifice?"

"Oh, sister, we've all sacrificed. I understand that this is all
very new to you, and that it will take some getting used to. I'm
200 sure we'll see each other again, someday. After all, we all play
in the same world here, don't we?"

Mala realized that the breathing she'd heard, the other voices
on the chat channel, had all fallen silent. For a short time, it had
just been Mala and this woman who called her "sister."

205 "What is your name?"

"I'm Nor-Ayu," she said. "But they call me ,Big Sister Nor.' All over
the world, they call me this. What do I call you?"

Mala's name was on the tip of her tongue, but she did not say it.
Instead, she said, "General Robotwallah."

210 "A very good name," Big Sister Nor said. "It was my pleasure to meet
you." With that, the giant mecha dropped her and turned and lumbered
away, crushing zombies under its feet.

Mala stood up and felt the many pops and snaps of her spine and
muscles. She had been sitting for, oh, hours and hours.

215 She rolled her head from side to side on her neck, working out
the stiffness there and she saw Mrs Dibyendu's idiot nephew watching

her. His lip was pouched with reeking betel saliva, and he was staring at her with a frankness that made her squirm right to the pit of her stomach.

220 "You stayed behind for me," he said, a huge grin on his face. His teeth were brown. He wasn't really an idiot -- not soft in the head, anyway. But he was very thick and very slow, with a brutal strength that Mrs Dibyendu always described as his "special fortitude." Mala thought he was just a thug. She'd

225 seen him walking in the narrow streets of Dharavi. He never shifted for women or old people, making them go around him even when it meant stepping into mud or worse. And he chewed betel all the time. Lots of people chewed betel, it was like smoking, but her mother detested the habit and had told her so many times that it was a "low" habit

230 and dirty that she couldn't help but think less of betel chewers. He regarded her with his bloodshot eyes. She suddenly felt very vulnerable, the way she'd felt all the time, when they'd first come to Dharavi. She took a step to the right and he took a step to the right as well. That was a line crossed: once he blocked

235 her exit, he'd announced his intention to hurt her. That was basic military strategy. He had made the first move, so he had the initiative, but he'd also showed his hand quickly, so --

She feinted left and he fell for it. She lowered her head like a bull and butted it into the middle of his chest. Already off-balance, 240 he went down on his back. She didn't stop moving, didn't look back, just kept going, thinking of that charging bull, running over him as she made for the doorway without stopping. One heel came down on his ribcage, the next on his face, mashing his lips and nose. She wished that something had gone crunch but nothing did.

245 She was out the door in an instant and into the cool air of the dark, dark Dharavi night. Around her, the sound of rats running over the roofs, the distant sounds of the roads, snoring. And many other, less identifiable sounds, sounds that might have been lurkers hiding in the shadows around them. Muffled speech. A distant train.

250 Suddenly, sending her army away didn't seem like such a good idea. Behind her, she heard a much clearer sound of menace. The idiot nephew crashing through the door, his shoes on the packed earth road. She slipped back into an alley between two buildings, barely wider than her, her feet splashing through some kind of warm liquid 255 that wafted an evil stench up to her nose. The idiot nephew lumbered past into the night. She stayed put. He lumbered back, looking in all directions for her.

There she stood, waiting for him to give up, but he would not. Back and forth he charged. He'd become the bull, enraged, tireless,

260 stupid. She heard his voice rasping in his chest. She had her mobile
phone in her hand, her other hand cupped over it, shielding
the treacherous light it gave off from its tiny screen. It was 12:47
now, and she had never been alone at this hour in all her 14 years.
She could text someone in her army -- they would come to get her,
265 wouldn't they? If they were awake, or if their phones' chirps woke
them. No one was awake at this hour, though. And how to explain?
What to say?

She felt like an idiot. She felt ashamed. She should have predicted
this, should have been the general, should have employed strategy.
270 Instead, she'd gotten boxed in.

She could wait. All night, if necessary. No need to let her army
know of her weakness. Idiot nephew would tire or the sun would rise,
it was all the same to her.

Through the thin walls of the houses on either side of her,
275 the sound of snoring. The evil smell rose up from the liquid below
her in the ditch, and something slimy was squishing between her toes.
It burned at her skin. The rats scampered overhead, sounding like
rain on the tin roofs. Stupid, stupid, stupid, it was her mantra,
over and over in her mind.

280 The bull was tiring. The next time he passed, his breath came
in terrible wheezes that blew the stink of betel before him like
sweet rot. She could wait for his next pass, then run.

It was a good plan. She hated it. He had -- He'd threatened her. He'd
scared her. He should pay. She was the General Robotwallah, not merely
285 some girl from the village. She was from Dharavi, tough. Smart.

He wheezed past and she slipped out of the alley, her feet
coming free of the muck with audible plops. He was facing away
from her still, hadn't heard her yet, and he had his back to her.
The stupid boys in her army only fought face to face, talked about
290 the "honor" of hitting from behind. Honor was just stupid boy-things.
Victory beat honor.

She braced herself and ran toward him, both arms stiff, hands
at shoulder-height. She hit him high and kept moving, the way
he had before, and down he fell again, totally unprepared
295 for the assault from the rear. The sound he made on the dirt was
like the sound of a goat dropping at the butcher's block. He was
trying to roll over and she turned around and ran at him, jumping
up in the air and landing with both muddy feet on his head,
driving his face into the mud. He shouted in pain, the sound muffled
300 by the dirt, and then lay, stunned.

She went back to him then, and knelt at his head, his hairy earlobe inches from her lips.

"I wasn't waiting for you at the cafe. I was minding my own business," she said. "I don't like you. You shouldn't chase girls or
305 the girls might turn around and catch you. Do you understand me? Tell me you understand me before I rip out your tongue and wipe your ass with it." They talked like this on the chat-channels for the games all the time, the boys did, and she'd always disapproved of it. But the words had power, she could feel it in her mouth, hot
310 as blood from a bit tongue.

"Tell me you understand me, idiot!" she hissed.

"I understand," he said, and the words came mashed, from mashed lips and a mashed nose.

She turned on her heel and began to walk away. He groaned behind her,
315 then called out, "Whore! Stupid whore!"

She didn't think, she just acted. Turned around, ran at his still-prone body, indistinct in the dusk, one step, two step, like a champion footballer coming in for a penalty kick and then she did kick him, the foetid water spraying off her shoe's saturated toe as
320 it connected with his big, stupid ribcage. Something snapped in there -- maybe several somethings, and oh, didn't that feel wonderful?

He was every man who'd scared her, who'd shouted filthy things after her, who'd terrorized her mother. He was the bus driver who'd threatened to put them out on the roadside when they wouldn't pay him
325 a bribe. Everything and everyone that had ever made her feel small and afraid, a girl from the village. All of them.

She turned around. He was clutching at his side and blubbering now, crying stupid tears on his stupid cheeks, luminous in the smudgy moonlight that filtered through the haze of plastic smoke that hung
330 over Dharavi. She would up and took another pass at him, one step, two step, kick, and crunch, that satisfying sound from his ribs again. His sobs caught in his chest and then he took a huge, shuddering breath and howled like a wounded cat in the night, screamed so loud that here in Dharavi, the lights came on and voices
335 came to the windows.

It was as though a spell had been broken. She was shaking and drenched in sweat, and there were people peering at her in the dark. Suddenly she wanted to be home as fast as possible, if not faster. Time to go.

340 She ran. Mala had loved to run through the fields as a little girl, hair flying behind her, knees and arms pumping, down the dirt roads. Now she ran in the night, the reek of the ditch water smacking her in the nose with each squelching step. Voices chased

her through the night, though they came filtered through the hammer
345 of her pulse in her ears and later she could not say whether
they were real or imagined.

But finally she was home and pelting up the steps to the third-floor
flat she had rented for her family. Her thundering footsteps raised
cries from the downstairs neighbors, but she ignored them, fumbled
350 with her key, let herself in.

Her brother Gopal looked up at her from his mat, blinking
in the dark, his skinny chest bare. "Mala?"

"It's OK," she said. "Nothing. Sleep, Gopal."

He slumped back down. Mala's shoes stank. She peeled them off,
355 using just the tips of her fingers, and left them outside the door.
Perhaps they would be stolen -- though you would have to be desperate
indeed to steal those shoes. Now her feet stank. There was a large
jug of water in the corner, and a dipper. Carefully, she carried
the dipper to the window, opened the squealing shutter, and poured
360 the water slowly over the her feet, propping first one and then
the other on the windowsill. Gopal stirred again. "Be quiet,"
he said, "it's sleep-time."

She ignored him. She was still out of breath, and the reality
of what she'd done was setting in for her. She had kicked the idiot
365 nephew -- how many times? Two? Three? And something in his body had

gone crack each time. Why had he blocked her? Why had he followed her into the night? What was it that made the big and the strong take such sport in terrorizing the weak? Whole groups of boys would do this to girls and even grown women sometimes -- follow them, calling after them, touching them, sometimes it even led to rape. They called it "Eve-teasing" and they treated it like a game. It wasn't a game, not if you were the victim.

Why did they make her do it? Why did all of them make her do it? The sound of the crack had been so satisfying then, and it was so sickening now. She was shaking, though the night was so hot, one of those steaming nights where everything was slimy with the low-hanging, soupy moisture.

And she was crying, too, the crying coming out without her being able to control it, and she was ashamed of that, too, because that's what a girl from the village would do, not brave General Robotwallah.

Calloused hands touched her shoulders, squeezed them. The smell of her mother in her nose: clean sweat, cooking spice, soap. Strong, thin arms encircled her from behind.

"Daughter, oh daughter, what happened to you?"

And she wanted to tell Ammaji everything, but all that came out were cries. She turned her head to her mother's bosom and heaved with the sobs that came and came and came in waves, feeling like

they'd turn her inside out. Gopal got up and moved into the next room,
silent and scared. She noticed this, noticed all of it as from a great
390 distance, her body sobbing, her mind away somewhere, cool and remote.

"Ammaji," she said at last. "There was a boy."

Her mother squeezed her harder. "Oh, Mala, sweet girl --"

"No, Ammaji, he didn't touch me. He tried to. I knocked him down.
Twice. And I kicked him and kicked him until I heard things breaking,
395 and then I ran home."

"Mala!" her mother held her at arm's length. "Who was he?" Meaning,
Was he someone who can come after us, who can make trouble for us,
who could ruin us here in Dharavi?

"He was Mrs Dibyendu's nephew, the big one, the one who makes trouble
400 all the time."

Her mothers fingers tightened on her arms and her eyes went wide.

"Oh, Mala, Mala -- oh, no."

And Mala knew exactly what her mother meant by this, why she was
consumed with horror. Her relationship with Mr Banerjee came from Mrs
405 Dibyendu. And the flat, their lives, the phone and the clothes
they wore -- they all came from Mr Banerjee. They balanced on a shaky
pillar of relationships, and Mrs Dibyendu was at the bottom of it,
all resting on her shoulders. And the idiot nephew could convince

her to shrug her shoulders and all would come tumbling down --

410 the money, the security, all of it.

That was the biggest injustice of all, the injustice that had driven her to kick and kick and kick -- this oaf of a boy knew that he could get away with his grabbing and intimidation because she couldn't afford to stop him. But she had stopped him and she could not --

415 would not -- be sorry.

"I can talk with Mr Banerjee," she said. "I have his phone number. He knows that I'm a good worker -- he'll make it all better. You'll see, Ammaji, don't worry."

"Why, Mala, why? Couldn't you have just run away? Why did you have
420 to hurt this boy?"

Mala felt some of the anger flood back into her. Her mother, her own mother --

But she understood. Her mother wanted to protect her, but her mother wasn't a general. She was just a girl from the village, all grown up.
425 She had been beaten down by too many boys and men, too much hurt and poverty and fear. This was what Mala was destined to become, someone who ran from her attackers because she couldn't afford to anger them. She wouldn't do it.

No matter what happened with Mr Banerjee and Mrs Dibyendu and
430 her stupid idiot nephew, she was not going to become that person.

#8

1 If you want to get rich without making anything or doing anything
that anyone needs or wants, you need to be fast.

The technical term for this is arbitrage. Imagine that you live
in an apartment block and it's snowing so hard out that no one wants
5 to dash out to the convenience store. Your neighbor to the right,
Mrs Hungry, wants a banana and she's willing to pay \$0.50 for it.
Your neighbor to the left, Mr Full, has a whole cupboard full
of bananas, but he's having a hard time paying his phone bill
this month, so he'll sell as many bananas as you want to buy
10 for \$0.30 apiece.

You might think that the neighborly thing to do here would be
to call up Mrs Hungry and tell her about Mr Full, letting them
consummate the deal. If you think that, forget getting rich without
doing useful work.

15 If you're an arbitrageur, then you think of your neighbors'
regrettable ignorance as an opportunity. You snap up all of Mr Full's
bananas, then scurry over to Mrs Hungry's place with your hand
out. For every banana she buys, you pocket \$0.20. This is called
arbitrage.

20 Arbitrage is a high-risk way to earn a living. What happens if Mrs Hungry changes her mind? You're stuck holding the bananas, that's what.

Or what happens if some other arbitrageur beats you to Mrs Hungry's door, filling her apartment with all the bananas she could ever need?

25 Once again, you're stuck with a bunch of bananas and nowhere to put them (though a few choice orifices do suggest themselves here).

In the real world, arbitrageurs don't drag around bananas -- they buy and sell using networked computers, surveying all the outstanding orders ("bids") and asks, and when they find someone willing to pay
30 more for something than someone else is paying for it, they snap up that underpriced item, mark it up, and sell it.

And this happens very, very quickly. If you're going to beat the other arbitrageurs with the goods, if you're going to get there before the buyer changes her mind, you've got to move faster than
35 the speed of thought. Literally. Arbitrage isn't a matter of a human being vigilantly watching the screens for price-differences.

No, arbitrage is all done by automated systems. These little traderbots rove the world's networked marketplaces, looking for arbitrage opportunities, buying something and selling it in less
40 than a microsecond. A good arbitrage house conducts a billion or more trades every day, squeezing a few cents out of each one. A billion

times a few cents is a lot of money -- if you've got a fast computer cluster, a good software engineer, and a blazing network connection, you can turn out ten or twenty million dollars a day.

45 Not bad, considering that all you're doing is exploiting the fact that there's a person over here who wants to buy something and a person over there who wants to sell it. Not bad, considering that if you and all your arbitraging buddies were to vanish tomorrow, the economy and the world wouldn't even notice. No one needs or wants
50 your "service" but it's still a sweet way to get rich.

The best thing about arbitrage is that you don't need to know a single, solitary thing about the stuff you're buying and selling in order to get rich off of it. Whether it's bananas or a vorpal blade, all you need to know about the things you're buying is
55 that someone over here wants to buy them for more than someone over there wants to sell them for. Good thing, too -- if you're closing the deal in less than a microsecond, there's no time to sit down and google up a bunch of factoids about the merchandise.

And the merchandise is pretty weird. Start with the fact that a lot
60 of this stuff doesn't even exist -- vorpal blades, grabthar's hammers, the gold of a thousand imaginary lands.

Now consider that people trade more than gold: the game Gods sell all kinds of funny money. How about this one:

Offered: Svartalfaheim Warriors bonds, worth 100,000 gold, payable
65 six months from now. This isn't even real fake gold -- it's
the promise of real fake gold at some time in the future. Stick
that into the market for a couple months, baby, and watch it go.
Here's a trader who'll pay five percent more than it was worth
yesterday -- he's betting that the game will get more popular some
70 time between now and six months from now, and so the value of goods
in the game will go up at the same time.

Or maybe he's betting that the game Gods will just raise the price
on everything and make it harder to clobber enough monsters to raise
the gold to get it, driving away all but the hardest-core players,
75 who'll pay anything to get their hands on the dough.

Or maybe he's an idiot.

Or maybe he thinks you're an idiot and you'll give him ten percent
tomorrow, figuring that he knows something you don't.

And if you think that's weird, here's an even better one!

80 Coca-Cola sells you a six-month Svartalfaheim Warriors 100,000 gold
bond, but you're worried that it's going to fall in value between
now and D-Day, when the bond matures. So you find another trader
and you ask him for some insurance: you offer him \$1.50 to insure
your bond. If the bond goes up in value, he gets to keep the \$1.50
85 and you get to keep the profits from the bond. If the bond goes down

in value, he has to pay you the difference. If that's more than \$1.50, he's losing money.

This is basically an insurance policy. If you go to a life-insurance company and ask them for a policy on your life, they'll make a bet
90 on how likely it is that you're going to croak, and charge you enough that, on average, they make a profit (providing they're guessing accurately at your chances of dying). So if the trader you're talking to thinks that Svartalfaheim Warriors is going to tank, he might charge you \$10, or \$100.

95 So far, so good, right?

Now, here's where it gets even weirder. Follow along.

Imagine that there's a third party to this transaction, some guy sitting on the sidelines, holding onto a pot of money, trying to figure out what to do with it. He watches you go to the trader and
100 buy an insurance policy for \$1.50 -- if Svartalfaheim Warriors gets better, you're out \$1.50, if it gets worse, the trader has to make up the difference.

After you've sealed your deal, this third party, being something of a ghoulish, goes up to the same trader and says, "Hey, how about
105 this? I want to place the same bet you've just placed with that guy. I'll give you \$1.50 and if his bond goes up, you keep it. If his bond

goes down, you pay me and him the difference." Essentially, this guy is betting that your bond is junk, and so maybe he finds a taker.

Now he's got this bet, which is worth nothing if your bond goes up,
110 and worth some unknown amount if your bond craters. And you know what he does with it?

He sells it.

He packages it up and finds some sucker who wants to buy his \$1.50 bet on your bond for more than the \$1.50 he'll have to cough up if your
115 bond goes up. And the sucker buys it and then he sells it. And then another sucker buys it and he sells it. And before you know it, the 100,000 gold-piece bond you bought for \$15 has \$1,000 worth of bets hanging off of it.

And this is the kind of thing an arbitrageur is buying and selling.

120 He's not carrying bananas from Mr Full to Mrs Hungry -- he's buying and selling bets on insurance policies on promises of imaginary gold.

And this is what he calls an honest day's work.

Nice work if you can get it.

#9

1 Matthew Fong and his employees raided through the night and
into the next day, farming as much gold as they could get out
of their level while the getting was good. They slept in shifts, and
they co-opted anyone who made the mistake of asking what they were up
5 to, dragooning them into mining the dungeon with them.

All the while, Master Fong was getting the gold out of their accounts
as fast as it landed in them. He knew that once the game Gods got
wind of his operation, they'd swoop in, suspend everyone's accounts,
and seize any gold they had in their inventory. The trick was to be
10 sure that there wasn't anything for them to seize.

So he hopped online and hit the big brokerage message-boards. These
weren't just grey-market, they were blackest black, and you needed
to know someone heavy to get in on them. Matthew's heavy was a guy
from Sichuan, skinny and shaky, with several missing teeth. He called
15 himself "Cobra," and he'd been the one who'd introduced Matthew
to Boss Wing all those months before. Cobra worked for someone
who worked for someone who worked for one of the big cartels, tough
criminal organizations that had all the markets for turning game-gold
into cash sewn up.

20 Cobra had given him a login and a briefing on how to do deals
on the brokernet. Now as the night wore on, he picked his way through
the interface, listing his gold and setting an asking price that was
half of the selling price listed on the white, above-ground gold-
store that gweilos used to buy the game gold from the brokers.

25 He waited, and waited, and waited, but no one bought his gold.
Every game world was divided into local servers and shards, and when
you signed up, you needed to set which server you wanted to play
on. Once you'd picked a server, you were stuck there -- your toon
couldn't just wander between the parallel universes. This made buying
30 and selling gold all the more difficult: if a gweilo wanted to buy
gold for his toon on server A, he needed to find a farmer who had
mined his gold on server A. If you mined all your gold on server B,
you were out of luck.

That's where the brokers came in. They bought gold from everyone, and
35 held it in an ever-shifting network of accounts, millions of toons
who fanned out all over the worlds and exchanged small amounts of gold
at irregular intervals, to fool the anti-laundering snoops in the game
logic that relentlessly hunted for farmers and brokers to bust.

Avoiding those filters was a science, one that had been hammered
40 together over decades in the real world before it migrated
to the games. If a big pension fund in the real world wanted to buy

half a billion dollars' worth of stock in Google, the last thing they want to do is tip off everyone else that they're about to sink that much cash into Google. If they did, everyone else would snap
45 up Google stock before they could get to it, mark it up, and gouge them on it.

So anyone who wants to buy a lot of anything -- who wants to move a lot of money around -- has to know how to do it in a way that's invisible to snoops. They have to be statistically insignificant,
50 which means that a single big trade has to be broken up into millions of little trades that look like ordinary suckers buying and selling a little stock for the hell of it.

No matter what secrets you're trying to keep and no matter who you're trying to keep them from, the techniques are the same. In every game
55 world there were thousands of seemingly normal characters doing seemingly normal things, giving each other seemingly normal sums of money, but at the end of the day, it all added up to millions of gold in trade, taking place right under the noses of the game Gods.

Matthew down-priced his gold, seeking the price at which a broker
60 would deign to notice him and take it off of him. All the trading took place in slangy, rapid Chinese -- that was one of the ways the brokers kept their hold on the market, since there weren't that many Russians and Indonesians and Indians who could follow

it and play along -- replete with insults and wheedles. Eventually,
65 Matthew found the magic price. It was lower than he'd hoped for,
but not by much, and now that he'd found it, he was able to move
the team's gold as fast as they could accumulate it, shuttling dummy
players in and out of the dungeon they were working to take the cash
to bots run by the brokers.

70 Finally, it dried up. First, the amount of gold in the dungeon
sharply decreased, with the gold dropping from 12,000 per hour
to 8,000, then 2,000, then a paltry 100. The mareridtbane
disappeared next, which was a pity, because he was able to sell
that directly, hawking it in the big towns, pasting and pasting and
75 pasting his offer into the chat where the real players could see
it. And then in came the cops, moderators with special halos around
them who dropped canned lectures into the chat, stern warnings about
having violated the game's terms of service.

And then the account suspensions, the games vanishing from one screen
80 after another, popping like soap bubbles. They were all dropped back
to the login screens and they slumped, grinning crazy and exhausted,
in their seats, looking at each other in exhausted relief. It was
over, at last.

"How much?" Lu asked, flung backwards over his chair, not opening
85 his eyes or lifting his head. "How much, Master Fong?"

Matthew didn't have his notebooks anymore, so he'd been keeping track on the insides of Double Happiness cigarette packages, long, neat tallies of numbers. His pen flickered from sheet to sheet, checking the math one final time, then, quietly, "\$3,400."

90 There was a stunned silence. "How much?" Lu had his eyes open now. Matthew made a show of checking the figures again, but that's all it was, a show. He knew that the numbers were right. "Three thousand, four hundred and two dollars and fourteen cents." It was double the biggest score they'd ever made for Boss Wing. It was the most
95 money any of them had ever made. His share of it was more than his father made in a month. And he'd made it in one night.

"Sorry, how much?"

"8,080 bowls of dumplings, Lu. That much."

The silence was even thicker. That was a lot of dumplings. That was
100 enough to rent their own place to use as a factory, a place with computers and a fast internet connection and bedrooms to sleep in, a place where they could earn and earn, where they could grow rich as any boss.

Lu leapt out of his chair and whooped, a sound so loud
105 that the entire cafe turned to look at them, but they didn't care, they were all out of their seats now, whooping and dancing around and hugging each other.

And now it was the day, a new day, the sun had come up and gone down and risen in their long labor in the cafe, and they had won. It was
110 a new day for them and for everyone around them.

They stepped out into the sun and there were people on the streets, throngs buying and selling, touts hustling, pretty girls in good clothes walking arm in arm under a single parasol. The heat of the day was like a blast furnace after the air-conditioned
115 cool of the cafe, but that was good, too -- it baked out the funk of cigarette-mouth, coffee-mouth, no-food-mouth. Suddenly, none of them were sleepy. They all wanted to eat.

So Matthew took them out for breakfast. They were his team, after all. They took over the back table at an Indian restaurant near
120 the train station, a place he'd overheard his uncle Yiu-Yu telling his parents about, bragging about some business associate who took him there. Very sophisticated. And he'd read so much about Indian food in his comics, he couldn't wait to try some.

All the other customers in there were either foreigners or Hong Kong
125 people, but they didn't let that get to them. The boys sat at their back table and played with their forks and ate plate after plate of curry and fresh hot flatbreads called naan, and it was delicious and strange and the perfect end to what had turned out to be the perfect night.

130 Halfway through the dessert -- delicious mango ice-cream --
the sleeplessness finally caught up with them all. They sat on their
seats in their torpor, hands over their bellies, eyes half-open, and
Matthew called for the check.

They stepped out again into the light. Matthew had decided to go
135 to his parents' place, to sleep on the sofa for a little while, before
figuring out what to do about his smashed room with its smashed door.

As they blinked in the light, a familiar Wenjhou accented voice said,
"You aren't a very smart boy, are you?"

Matthew turned. Boss Wing's man was there, and three of his friends.

140 They rushed forward and grabbed the boys before they could react, one
of them so big that he grabbed a boy in each hand and nearly lifted
them off their feet.

His friends struggled to get free, but Boss Wing's man methodically
slapped them until they stopped.

145 Matthew couldn't believe that this was happening -- in broad
daylight, right here next to the train station! People crossed
the street to avoid them. Matthew supposed he would have done so too.

Boss Wing's man leaned in so close Matthew could smell the fish he'd
had for lunch on his breath. "Why are you a stupid boy, Matthew?"

150 You didn't seem stupid when you worked for Boss Wing. You always
seemed smarter than these children." He flapped his hand disparagingly

at the boys. "But Boss Wing, he trained you, sheltered you, fed you, paid you -- do you think it's honorable or fair for you to take all that investment and run out the door with it?"

155 "We don't owe Boss Wing anything!" Lu shouted. "You think you can make us work for him?"

Boss Wing's man shook his head. "What a little hothead. No one wants to force you to do anything, child. We just don't think it's fair for you to take all the training and investment we made in you and
160 run across the street and start up a competing business. It's not right, and Boss Wing won't stand for it."

The curry churned in Matthew's stomach. "We have the right to start our own business." The words were braver than he felt, but these were his boys, and they gave him bravery. "If Boss Wing doesn't like
165 the competition, let him find another line of work."

Boss Wing's man didn't give him any forewarning before he slapped Matthew so hard his head rang like a gong. He stumbled back two steps, then tripped over his heels and fell on his ass, landing on the filthy sidewalk. Boss Wing's man put a foot on his chest and
170 looked down at him.

"Little boy, it doesn't work like that. Here's the deal -- Boss Wing understands if you don't want to work at his factory, that's fine. He's willing to sell you the franchise to set up

your own branch operation of his firm. All you have to do is
175 pay him a franchise fee of 60 percent of your gross earnings.
We watched your gold-sales from Svartalfaheim. You can do as
much of that kind of work as you like, and Boss Wing will even
take care of the sales end of things for you, so you'll be free
to concentrate on your work. And because it's your firm, you get
180 to decide how you divide the money -- you can pay yourself
anything you like out of it."

Matthew burned with shame. His friends were all looking at him,
goggle eyed, scared. The weight from the foot on his chest increased
until he couldn't draw a breath.

185 Finally, he gasped out, "Fine," and the pressure went away. Boss
Wing's man extended a hand, helped him to his feet.

"Smart," he said. "I knew you were a smart boy." He turned
to Matthew's friends. "Your little boss here is a smart man. He'll
take you places. You listen to him now."

190 Then, without another word, he turned on his heel and walked away,
his men following him.

#10

1 The car that had plowed into Wei-Dong's father's car was driven
by a very exasperated, very tired British man, fat and bald, with two
angry kids in the back seat and an angry wife in the front seat.
He was steadily, quietly cursing in British, which was a lot like
5 cursing in American, but with a lot more "bloodies" in it. He paced
the sidewalk beside the wrecked Huawei, his wife calling at him
from inside the car to get back in the bloody car, Ronald, but Ronald
wasn't having any of it.

Wei-Dong sat on the narrow strip of grass between the road and
10 the sidewalk, dazed in the noon sun, waiting for his vision
to stop swimming. Benny sat next to him, holding a wad of kleenex
to staunch the bleeding from his broken nose, which he'd bounced
off of the dashboard. Wei-Dong brought his hands up to his forehead
to finger the lump there again. His hands smelled of new plastic,
15 the smell of the airbag that he'd had to punch his way out of.

The fat man crouched next to him. "Christ, son, you look like you've
been to the wars. But you'll be all right, right? Could have been
much worse."

"Sir," Benny Rosenbaum said, in a quiet voice muffled by the kleenex.

20 "Please leave us alone now. When the police come, we can all talk,
all right?"

"'Course, ,course." His kids were screaming now, hollering
from the back seat about getting to Disneyland, when were
they getting to Disneyland? "Shut it, you monsters," he roared.

25 The sound made Wei-Dong flinch back. He wobbled to his feet.

"Sit down, Leonard," his father said. "You shouldn't have gotten
out of the car, and you certainly shouldn't be walking around
now. You could have a concussion or a spinal injury. Sit down,"
he repeated, but Wei-Dong needed to get off the grass, needed to walk
30 off the sick feeling in his stomach.

Uh-oh. He barely made it to the curb, hands braced on the crumpled,
flaking rear section of the Huawei, before he started to barf,
a geyser of used food that shot straight out of his guts and flew all
over the wreck of the car. A moment later, his father's hands were
35 on his shoulders, steadying him. Angrily, he shook them off.

There were sirens coming now, and the fat man was talking intensely
to old Benny, though it was quiet enough that Wei-Dong could
only make out a few words -- insurance, fault, vacation -- all
in a wheedling tone. His father kept trying to get a word in,
40 but the guy was talking over him. Wei-Dong could have told him

that this wasn't a good strategy. Nothing was surer to make Volcano Benny blow. And here it came.

"Shut your mouth for a second, all right? Just SHUT IT."

The shout was so loud that even the kids in the back seat went
45 silent.

"YOU HIT US, you goddamned idiot! We're not going to go halves on the damage. We're not going to settle this for cash. I don't care if you're jetlagged, I don't care if you didn't buy the extra insurance on your rental car, I don't care if this will ruin your
50 vacation. You could have killed us, you understand that, moron?"

The man held up his hands and cringed behind them. "You were parked in the middle of the road, mate," he said, a note of pleading in his voice.

Everyone was watching them, the kids and the guy's wife,
55 the rubberneckers who slowed down to see the accident. The two men were totally focused on each other.

In other words, no one was watching Wei-Dong.

He thought about the sound his earwig made, crunching under his father's steel-toed shoe, heard the sirens getting closer, and...

60 He...

Left.

He sidled away toward the shrubs that surrounded a mini-mall and gas-station, nonchalant, clutching his school-bag, like he was just getting his bearings, but he was headed toward a gap there, a narrow
65 one that he just barely managed to squeeze through. He popped through into the parking lot around the mini-mall, filled with stores selling \$3 t-shirts and snow-globes and large bottles of filtered water. On this side of the shrubs, the world was normal and busy, filled with tourists on their way to or from Disneyland.

70 He picked up his pace, keeping his face turned away from the stores and the CCTV cameras outside of them. He felt in his pocket, felt the few dollars there. He had to get away, far away, fast, if he was going to get away at all.

And there was his salvation, the tourist bus that rolled through
75 the streets of the Anaheim Resort District, shuttling people from hotels to restaurants to the parks, crowded with sugared-up kids and conventioners with badges hanging around their necks, and it was trundling to the stop just a few yards away. He broke into a run, stumbled from the pain that seared through his head like
80 a lightning bolt, then settled for walking as quickly as he could. The sirens were very, very loud now, right there on the other side of the shrubs, and he was almost at the bus and there was his father's voice, calling his name and there was the bus and --

-- his foot came down on the bottom step, his back foot came up
85 to join it, and the impatient driver closed the doors behind him and
released the air-brake with a huge sigh and the bus lurched forward.
"Wei-Dong Rosenbaum," he whispered to himself, "you've just escaped
a parental kidnapping to a military school, what are you going
to do now?" He grinned. "I'm going to Disneyland!"

90 The bus trundled down Katella, heading for the bus-entrance, and
then it disgorged its load of frenetic tourists. Wei-Dong mingled
with them, invisible in the mass of humanity skipping past the huge,
primary-colored traffic pylons. He was on autopilot, remained
on autopilot as he unslung his school-bag to let the bored security
95 goon paw through it.

He'd had a Disneyland annual pass since he was old enough to ride
the bus. All the kids he knew had them too -- it beat going
to the mall after school, and even though it got boring after
a while, he could think of no better place to disappear into while
100 thinking through his next steps.

He walked down Main Street, heading for the little pink castle
at the end of the road. He knew that there were secluded benches
on the walkways around the castle, places where he could sit down and
think for a moment. His head felt like it was full of candy floss.

105 First thing he did after sitting down was check his phone. The ringer
had been off -- school rules -- but he'd felt it vibrating
continuously in his pocket. Fifteen missed calls from his father.
He dialled up his voicemail and listened to his dad rant about coming
back right now and all the dire things that would happen to him if
110 he didn't.

"Kid, whatever you think you're doing, you're wrong about it. You're
going to come home eventually. The sooner you call me back, the less
trouble we're going to have. And the longer you wait -- you listen
to this, Leonard -- the longer you wait, the worse it's going to be.
115 There are worse things than boarding school, kid. Much, much worse."
He stared vacantly at the sky, listening to this, and then he dropped
the phone as though he'd been scorched by it.

It had a GPS in it. They were always using phones to find runaways and
bad guys and lost hikers. He picked the phone up off the pavement and
120 slid the back out and removed the battery, then put it in his jacket
pocket, returning the phone to his jeans. He wasn't much
of a fugitive.

The police had been on the way to the accident when he left. They'd
arrived minutes later. The old man had decided that he'd run away,
125 so he'd be telling the cops that. He was a minor, and truant, and
he'd been in a car accident, and hell, face it, his family was

rich. That meant that the police would pay attention to his dad, which meant that they'd be doing everything they could to locate him. If they hadn't yet figured out where his phone was, they'd know soon enough -- they'd run the logs and find the call from Disneyland to his voicemail.

He started moving, shoving his way through the crowds, heading back up Main Street. He ducked around behind a barbershop quartet and realized that he was standing in front of an ATM. They'd be shutting down his card any second, too -- or, if they were smart, they'd leave the card live and use it to track him. He needed cash. He waited while a pair of German tourists fumbled with the machine and then jammed his card into it and withdrew \$500, the most the machine would dispense. He hit it again for another \$500, self-conscious now of the inch-thick wad of twenties in his hand. He tried for a third withdrawal, but the machine told him he'd gone to his daily limit. He didn't think he had much more than \$1,000 in the bank, anyway -- that was several years' worth of birthday money, plus a little from his summer job working at a Chinese PC repair shop at a mini-mall in Irvine.

He folded the wad and stuck it in his pocket and headed out of the park, not bothering with the hand-stamp. He started to head for the street, but then he turned on his heel and headed toward

150 the Downtown Disney shopping complex and the hotels that attached
to it. There were cheap tour-buses that went from there up to LA,
down to San Diego, to all the airports. There was no easier, cheaper
way to get far from here.

The lobby of the Grand Californian Hotel soared to unimaginable
155 heights, giant beams criss-crossing through the cavernous space. Wei-
Dong had always liked this place. It always seemed so rendered, like
an imaginary place, with the intricate marble inlays on the floor,
the ten-foot-high stained-glass panels set into the sliding doors,
the embroidered upholstery on the sofas. Now, though, he just wanted
160 to get through it and onto a bus to --

Where?

Anywhere.

He didn't know what he was going to do next, but one thing he did
know, he wasn't going to be sent away to some school for screwups,
165 kicked off the Internet, kicked off the games. His father wouldn't
have allowed anyone to do this to him, no matter what problems he was
having. The old man would never let himself be pushed around and
shaken up like this.

His mother would worry -- but she always worried, didn't she?

170 He'd send her email once he got somewhere, an email every day,
let her know that he was OK. She was good to him. Hell, the old

man was good to him, come to that. Mostly. But he was seventeen now, he wasn't a kid, he wasn't a broken toy to be shipped back to the manufacturer.

175 The man behind the concierge desk didn't bat an eye when Wei-Dong asked for the schedule for the airport shuttles, just handed it over. Wei-Dong sat down in the darkest corner by the stone fireplace, the most inconspicuous place in the whole hotel. He was starting to get paranoid now, he could recognize the feeling, but
180 it didn't help soothe him as he jumped and stared at every Disney cop who strolled through the lobby, doubtless he was looking as guilty as a mass-murderer.

The next bus was headed for LAX, and the one after, for the Santa Monica airport. Wei-Dong decided that LAX was the right place to go.

185 Not so he could get on a plane -- if his dad had called the cops, he was sure they'd have some kind of trace on at the ticket-sales windows. He didn't know exactly how that worked, but he understood how bottlenecks worked, thanks to gaming. Right now, he could be anywhere in LA, which meant that they'd have to devote a gigantic
190 amount of effort in order to find him. But if he tried to leave by airplane, there'd be a much smaller number of places they'd have to check to catch him -- the airline counters at four or five airports in town -- and that was a lot more practical.

But LAX also had cheap buses to everywhere in LA, buses that went
195 to every hotel and neighborhood. It would take a long time, sure --
an hour and a half from Disneyland to LAX, another hour or two to get
back to LA, but that was fine. He needed time -- time to figure out
what he was going to do next.

Because when he was totally honest with himself, he had to admit
200 that he had no freaking idea.

#11

1 Mala woke early, after a troubled sleep. In the village, she'd often
risen early, and listened to the birds. But there was no birdsong
when her eyes fluttered open, only the sussuration of Dharavi --
cars, rats, people, distant factory noises, goats. A rooster. Well,
5 that was a kind of bird. A little smile touched her lips, and
she felt slightly better.

Not much, though. She sat up and rubbed her eyes, stretched her arms.
Gopal still slept, snoring softly, lying on his stomach the way
he had when he was a baby. She needed the toilet, and, as it was
10 light out, she decided that she would go out to the communal one
a little ways away, rather than using the covered bucket in the room.
In the village, they'd had a proper latrine, deep dug, with a pot
of clean water outside of it that the women kept filled all the time.
Here in Dharavi, the communal toilet was a much more closed-in,
15 reeking place, never very clean. The established families in Dharavi
had their own private toilets, so the public ones were only used
by newcomers.

It wasn't so bad this morning. There were ladies who got up even
earlier than her to slosh it out with water hauled from the nearby
20 communal tap. By nightfall, the reek would be eye-watering.

She loitered in the street in front of the house. It wasn't too hot yet, or too crowded, or too noisy. She wished it was. Maybe the noise and the crowds would drown out the worry racing through her mind. Maybe the heat would bake it out.

25 She'd brought her mobile out with her. It danced with notifiers about new things she could pay to see -- shows and cartoons and political messages, sent in the night. She flicked them away impatiently and scrolled through her address-book, stopping at Mr Banerjee's name and staring at it. Her finger poised over the send button.

30 It was too early, she thought. He'd be asleep. But he never was, was he? Mr Banerjee seemed to be awake at all hours, messaging her with new targets to take her army to. He'd be awake. He'd have been up all night, talking to Mrs Dibyendu.

Her finger hovered over the Send button.

35 The phone rang.

She nearly dropped it in surprise, but she managed to settle it in her hand and switch off the ringer, peer at the face.

Mr Banerjee, of course, as though he'd been conjured into her phone by her thoughts and her staring anxiety.

40 "Hello?" she said.

"Mala," he said. He sounded grave.

"Mr Banerjee." It came out in a squeak.

He didn't say anything else. She knew this trick. She used
it with her army, especially on the boys. Saying nothing made
45 a balloon of silence in your opponent's head, one that swelled to fill
it, until it began to echo with their anxieties and doubts. It worked
very well. It worked very well, even if you knew how it worked.

It was working well on her.

She bit her lip. Otherwise she would have blurted something, maybe
50 He was going to hurt me or He had it coming or I did nothing wrong.
Or, I am a warrior and I am not ashamed.

There. There was the thought, though it wanted to slip away and hide
behind He was going to hurt me, that was the thought she needed,
the platoon she needed to bring to the fore. She marshalled
55 the thought, chivvied it, turned it into an orderly skirmish line and
marched it forward.

"Mrs Dibyendu's idiot nephew tried to assault me last night, in case
you haven't heard." She waited a beat. "I didn't let him do it.
I don't think he'll try it again."

60 There was a snort, very faint, down the phone line. A suppressed
laugh? Barely contained anger? "I heard about it, Mala. The boy is
in the hospital."

"Good," she said, before she could stop herself.

“One of his ribs broke and punctured his lung. But they say he’ll
65 live. Still, it was quite close.”

She felt sick. Why? Why did it have to be this way? Why couldn’t
he have left her alone? “I’m glad he’ll live.”

“Mrs Dibyendu called me in the night to tell me that her sister’s
only son had been attacked. That he’d been attacked by a vicious gang
70 of your friends. Your ,army’.”

Now she snorted. “He says it because he’s embarrassed to have been so
badly beaten by me, just me, just a girl.”

Again, the silence ballooned in the conversation. He’s waiting for me
to say I’m sorry, that I’ll make it up somehow, that he can take
75 it from my wages. She swallowed. I won’t do it. The idiot made me
attack him, and he deserved what he got.

“Mrs Dibyendu,” he began, then stopped. “There are expenses that come
from something like this, Mala. Everything has a cost. You know that.
It costs you to play at Mrs Dibyendu’s cafe. It costs me to have
80 you do it. Well, this has a cost, too.”

Now it was her turn to be quiet, and to think at him, as hard as
she can, Oh yes, well, I think I already exacted payment from idiot
nephew. I think he’s paid the cost.

“Are you listening to me?”

85 She made a grunt of assent, not trusting herself to open her mouth.

"Good. Listen carefully. The next month, you work for me. Every rupee is mine, and I make this bad thing that you've brought down on yourself go away."

She pulled the phone away from her head as if it had gone red hot
90 and burned her. She stared at the faceplate. From very far away,
Mr Banerjee said, "Mala? Mala?" She put the phone back to her head.
She was breathing hard now. "It's impossible," she said, trying to stay
calm. "The army won't fight without pay. My mother can't live without
my pay. We'll lose our home. No," she repeated, "it's not possible."

95 "Not possible? Mala, it had better be possible. Whether or not
you work for me, I will have to make this right with Mrs Dibyendu.
It's my duty, as your employer, to do this. And that will cost money.
You have incurred a debt that I must settle for you, and that means
that you have to be prepared to settle with me."

100 "Then don't settle it," she said. "Don't give her one rupee. There
are other places we can play. Her nephew brought it on himself.
We can play somewhere else."

"Mala, did anyone see this boy lay his hands on you?"

"No," she said. "He waited until we were alone."

105 "And why were you alone with him? Where was your army?"

"They'd already gone home. I'd stayed late." She thought of Big
Sister Nor and her metamecha, of the union. Mr Banerjee would be

even angrier if she told him about Big Sister Nor. "I was studying tactics," she said. "Practicing on my own."

110 "You stayed alone with this boy, in the middle of the night.

What happened, really, Mala? Did you want to see what it was like to kiss him like a fillum star, and then it got out of control? Is that how it happened?"

"No!" She shouted it so loud that she heard people groaning

115 in their beds, calling sleepily out from behind their open windows.

"I stayed late to practice, he tried to stop me. I knocked him down and he chased me. I knocked him down and then I taught him why he shouldn't have chased me."

"Mala," he said, and she thought he was trying to sound fatherly

120 now, stern and old and masculine. "You should have known better than

to put yourself in that position. A general knows that you win some fights by not getting into them at all. Now, I'm not an unreasonable man. Of course, you and your mother and your army all need my money

if you're going to keep fighting. You can borrow a wage-packet from me

125 during this month, something to pay everyone with, and then you can

pay it back, little by little, over the next year or so. I'll take five in twenty rupees for 12 months, and we'll call it even."

It was hope, terrible, awful hope. A chance to keep her army, her flat, her respect. All it would cost her was one quarter of her earnings.

130 She'd have three quarters left. Three quarters was better than
nothing. It was better than telling Ammaji that it was all over.
"Yes," she said. "All right, fine. But we don't play at Mrs Dibyendu's
cafe anymore."

"Oh, no," he said. "I won't hear of it. Mrs Dibyendu will be glad
135 to have you back. You'll have to apologize to her, of course. You can
bring her the money for her nephew. That will make her feel better,
I'm sure, and heal any wounds in your friendship."

"Why?" There were tears on her cheeks now. "Why not let us go
somewhere else? Why does it matter?"

140 "Because, Mala, I am the boss and you are the worker and that is
the factory you work in. That's why." His voice was hard now, all
the lilt of false concern gone away, leaving behind a grinding like
rock on rock.

She wanted to put the phone down on him, the way they did
145 in the movies when they had their giant screaming rows,
and threw their phones into the well or smashed them
on the wall. But she couldn't afford to destroy her phone and
she couldn't afford to make Mr Banerjee angry.

So she said, "All right," in a quiet little voice that sounded like
150 a mouse trying not to be noticed.

"Good girl, Mala. Smart girl. Now, I've got your next mission for you. Are you ready?"

Numbly, she memorized the details of the mission, who she was going
155 to kill and where. She thought that if she did this job quickly,
she could ask him for another one, and then another -- work longer
hours, pay off the debt more quickly.

"Smart girl, good girl," he said again, once she'd repeated
the details back to him, and then he put the phone down.

160 She pocketed her phone. Around her, Dharavi had woken, passing
by her like she was a rock in a river, pressing past her on either
side. Men with shovels and wheelbarrows, boys with enormous rice-sacks
on each shoulder, filled with grimy plastic bottles on their way to some
sorting house, a man with a long beard and kufi skullcap and kurta
165 shirt hanging down to his knees leading a goat with a piece of rope.
A trio of women in saris, their midriffs stretched and striated
with the marks of the babies they'd borne, carrying heavy buckets
of water from the communal tap. There were cooking smells in the air,
a sizzle of dhal on the grill and the fragrant smell of chai. A boy
170 passed by her, younger than Gopal, wearing flapping sandals and short
pants, and he spat a stream of sickly sweet betel at her feet.

The smell made her remember where she was and what had happened and
what she had to do now.

She went past the Das family on the ground floor and trudged up
175 the stairs to their flat. Ammaji and Gopal were awake and bustling.
Ammaji had fetched the water and was making the breakfast over
the propane burner, and Gopal had his school uniform shirt and knee-
trousers on. The Dharavi school he attended lasted for half the day,
which gave him a little time to play and do homework and then a few
180 more hours to work alongside of Ammaji in the factory.

"Where have you been?" Ammaji said.

"On the phone," she said, patting the little pocket sewn
of her tunic. "With Mr Banerjee." She waggled her chin from side
to side, saying I've had business.

185 "What did he say?" Ammaji's voice was quiet and full of false
nonchalance.

Ammaji didn't need to know what transpired between Mr Banerjee and
her. Mala was the general and she could manage her own affairs.

"He said that all was forgiven. The boy deserved it. He'll make
190 it fine with Mrs Dibyendu, and it will be fine." She waggled her chin
from side to side again -- It's all fine. I've taken care of it.

Ammaji stared into the pan and the food sizzling in it and nodded
to herself. Though she couldn't see, Mala nodded back. She was
General Robotwallah and she could make it all good.

#12

1 Wei-Dong had been to downtown LA once, on a class trip to the Disney
Concert Hall, but then they'd driven in, parked, and marched like
ducklings into the hall and then out again, without spending any
time actually wandering around. He remembered watching the streets go
5 by from the bus window, faded store windows and slow-moving people,
check-cashing places and liquor stores. And Internet cafes. Lots and
lots of Internet cafes, especially in Koreatown, where every strip
mall had a garish sign advertising "PC Baang" -- Korean for net-cafe.
But he didn't know exactly where Koreatown was, and he needed
10 an Internet cafe to google it, and so he caught the LAX bus
to the Disney Concert Hall, thinking he could retrace the bus-
route and find his way to those shops, get online, talk to his homies
in Guangzhou, figure out the next thing.
But Koreatown turned out to be harder to find and farther than he'd
15 thought. He asked the bus-driver for directions, who looked at him
like he was crazy and pointed downhill. And so he started walking,
and walking, and walking for block after dusty block. From the window
of the school-bus, downtown LA had looked slow-moving and faded, like
a photo left too long in a window.

20 On foot, it was frenetic, the movement of the buses, the homeless
people walking or wheeling or hobbling past him, asking him
for money. He had \$1000 in his front jeans pocket, and it seemed
to him that the bulge must be as obvious as a boner at the blackboard
in class. He was sweating, and not just from the heat, which seemed
25 ten degrees hotter than it had been in Disneyland.

And now he wasn't anywhere near Koreatown, but had rather found
his way to Santee Alley, the huge, open-air pirate market
in the middle of LA. He'd heard about the place before, you saw
it all the time in news-specials about counterfeit goods busts,
30 pictures of Mexican guys being led away while grimly satisfied cops
in suits or uniform baled up mountains of fake shirts, fake DVDs,
fake jeans, fake games.

Santee Alley was a welcome relief from the streets around it.
He wandered deep into the market, the storefronts all blaring
35 their technobrega and reggaeton at him, the hawkers calling out
their wares. It was like the real market on which all the hundreds
of in-game markets he'd visited had been based upon and he found
himself slowing down and looking in at the gangster clothes and
the bad souvenir junk and the fake electronics. He bought a big
40 cup of watermelon drink and a couple of empanadas from a stall,

carefully drawing a single twenty from his pocket without bringing out the whole thing.

Then he'd found an Internet cafe, filled with Guatemalans chatting with their families back home, wearing slick and tiny earwigs.

45 The girl behind the counter -- barely older than him -- sold him one that claimed to be a Samsung for \$18, and then rented him a PC to use it with. The fake earwig fit as well as his real one had, though it had a rough seam of plastic running around its length while his had been as smooth as beach-glass.

50 But it didn't matter. He had his network connection, he had his earwig, and he had his game. What more could he need?

Well, his posse, for starters. They were nowhere to be found.

He checked his new watch and pressed the button that flipped it to the Chinese timezone. 5AM. Well, that explained it.

55 He checked his inventory, checked the guild-bank. He hadn't been able to do the corpse run after he'd been snatched out of the game by his father and the Ronald Reagan High Thought Police, so he didn't expect to have his vorpal blade still, but he did, which meant that one of the gang had rescued it for him, which was
60 awfully thoughtful. But that was just what guildies did for each other, after all.

It was coming up to dinner-time on the east coast, which meant that Savage Wonderland was starting to fill up with people getting home from work. He thought about the black riders who slaughtered them that morning and wondered who they'd been. There were plenty of people who hunted gold farmers, either because they worked for the game or for a rival gold-farm clan, or because they were bored rich players who hated the idea of poor people invading "their" space and working where they played.

70 He knew he should flip to his email and check for messages from his parents. He didn't like using email, but his parents were addicted to it. No doubt they were freaking out by now, calling out the army and navy and the national guard to find their wayward son. Well, they could freak out all they wanted. He wasn't going to go back and he didn't need to go back.

He had \$1000 in his pocket, he was nearly 18 years old, and there were lots of ways to get by in the big city that didn't involve selling drugs or your body. His guildies had shown him that. All you needed to earn a living was a connection to the net and a brain in your head. He looked around the cafe at the dozens of Guatemalans talking to home on their earwigs, many not much older than him. If they could earn a living -- not speaking the language, not legal to work, no formal education, hardly any idea of how to use

technology beyond the little bit of knowledge necessary to call
85 home on the cheap -- then surely he could. His grandfather had
come to America and found a job when he was Wei-Dong's age. It was
a family tradition, practically.

It wasn't that he didn't love his parents. He did. They were good
people. They loved him in their way. But they lived in a bubble
90 of unreality, a bubble called Orange County, where they still had
rows of neat identical houses and neat identical lives, while around
them, everything was collapsing. His father couldn't see it, even
though hardly a day went by that he didn't come home and complain
bitterly about the containers that had fallen off his ship in yet
95 another monster storm, about the price of diesel sailing through
the stratosphere, about the plummeting dollar and the skyrocketing
Renminbi and the ever-tightening belts of Americans whose orders
for goods from South China were clobbering his business.

Wei-Dong had figured all this out because he paid attention and he saw
100 things as they were. Because he talked to China, and China talked
back to him. The fat and comfortable world he'd grown up in was not
permanent; scratched in the sand, not carved in stone. His friends
in China could see it better than anyone else could. Lu had worked as
a security guard in a factory in Shilong New Town, a city that made
105 appliances for sale in Britain. It had taken Wei-Dong some time

to understand this: the entire city, four million people, did nothing but make appliances for sale in Britain, a country with eighty million people.

Then, one day, the factories on either side of Lu's had closed.

110 They had all made goods for a few different companies, employing armies of young women to run the machines and assemble the pieces that came out of them. Young women always got the best jobs. Bosses liked them because they worked hard and didn't argue so much -- at least, that's what everyone said. When Lu left his village
115 in Sichuan province to come to south China, he'd talked to one of the girls who had come home from the factories for the Mid-Autumn Festival, a girl who'd left a few years before and found wealth in Dongguan, who'd bought her parents a fine new two-storey house with her money, who came home every year for the Festival in fine
120 clothes with a new mobile phone in a designer bag, looking like an alien or a model stepped fresh out of a magazine ad.

"If you go to a factory and it's not full of young girls, don't take a job there," was her advice. "Any place that can't attract a lot of young girls, there's something wrong with it." But the factory
125 that Lu worked at -- all the factories in Shilong New Town -- were filled with young girls. The only jobs for men were as drivers, security guards, cleaners and cooks. The factories boomed, each one

a small city itself, with its own kitchens, its own dormitories, its own infirmary and its own customs checkpoint where every vehicle and
130 visitor going in or out of the wall got checked and inspected.

And these indomitable cities had crumbled. The Highest Quality Dishwasher Company factory closed on Monday. The Boundless Energy Enterprises hot-water heater plant went on Wednesday. Every day, Lu saw the bosses come in and out in their cars, waving them through
135 after they'd flicked their IDs at him. One day, he steeled his nerve and leaned in the window, his face only inches from that of the man who paid his wages every month.

"We're doing better than the neighbors, eh, Boss?" He tried for a jovial smile, the best he could muster, but he knew it wasn't
140 very good.

"We do fine," the boss had barked. He had very smooth skin and a smart sport-coat, but his shoulders were dusted with dandruff. "And no one says otherwise!"

"Just as you say, boss," Lu said, and leaned out of the window,
145 trying to keep his smile in place. But he'd seen it in the boss's face -- the factory would close.

The next day, no bus came to the bus-stop. Normally, there would have been fifty or sixty people waiting for the bus, mostly young men, the women mostly lived in the dorms. Security guards and janitors

150 didn't rate dorm rooms. That morning, there were eight people waiting
when he arrived at the bus-stop. Ten minutes went by and a few
more trickled to the stop, and still no bus came. Thirty minutes
passed -- Lu was now officially late for work -- and still no bus
came. He canvassed his fellow waiters to see if anyone was going
155 near his factory and might want to share a taxi -- an otherwise
unthinkable luxury, but losing his job even was more unthinkable.
One other guy, with a Shaanxi accent, was willing, and that's
when they noticed that there didn't seem to be any taxis cruising
on the road either. So Lu, being Lu, walked to work, fifteen
160 kilometers in the scorching, melting, dripping heat, his security
guard's shirt and coat over his arm, his undershirt rolled up to bare
his belly, the dust caking up on his shoes. And when he arrived
at the Miracle Spirit condenser dryer factory and found himself
in a mob of thousands of screeching young women in factory-issue
165 smocks, crowded around the fence and the double-padlocked rattling
it and shouting at the factory's darkened doors. Many of the girls
had small backpacks or duffel-bags, overstuffed and leaking underwear
and makeup on the ground.
"What's going on?" he shouted at one, pulling her out of the mob.

170 "The bastards shut the factory and put us out. They did it at shift-change. Pulled the fire-alarm and screamed ,Fire' and ,Smoke' and when we were all out here, they ran out and padlocked the gate!"

"Who?" He'd always thought that if the factory were going to shut down, they'd use the security guards to do it. He'd always thought
175 that he, at least, would get one last paycheck out of the company.

"The bosses, six of them. Mr Dai and five of his supervisors.

They locked the front gate and then they drove off through the back gate, locking it behind them. We're all locked out. All my things are in there! My phone, my money, my clothes --"

180 Her last paycheck. It was only three days to payday, and, of course, the company had kept their first eight weeks' wages when they all started working. You had to ask your boss's permission if you wanted to change jobs and keep the money -- otherwise you'd have to abandon two months' pay.

185 Around Lu, the screams rose in pitch and small, feminine fists flailed at the air. Who were they shouting at? The factory was empty. The factory was empty. If they climbed the fence, cutting the barbed wire at the top, and then broke the locks on the factory doors, they'd have the run of the place. They couldn't carry out a condenser
190 dryer -- not easily, anyway -- but there were plenty of small things: tools, chairs, things from the kitchen, the personal belongings

of the girls who hadn't thought to bring them with when the fire alarm sounded. Lu knew about all the things that could be smuggled out of the factory. He was a security guard. Or had been. Part of his job
195 had been to search the other employees when they left to make sure they weren't stealing. His supervisor, Mr Chu, had searched him at the end of each shift, in turn. He wasn't sure who, if anyone, searched Mr Chu.

He had a small multitool that he clipped to his belt every morning.
200 Having a set of pliers, a knife, and a screwdriver on you all the time changed the way you saw the world -- it became a place to be cut, sliced, pried and unscrewed.

"Is that your only jacket?" he shouted into the ear of the girl he'd been talking to. She was a little shorter than him, with a large mole
205 on her cheek that he rather liked.

"Of course not!" she said. "I have three others inside."

"If I get you those three, can I use this one?" He unfolded the pliers on his multitool. They were joined by a set of cogs that compounded the leverage of a squeezing palm, and the jaws
210 of the plier were inset with a pair of wicked-sharp wire-cutters. The girl in his village had worked for a time in the SOG factory in Dongguan and she'd given him a pair and wished him good luck in South China.

The girl with three more jackets looked up at the barbed wire.

215 "You'll be cut to ribbons," she said.

He grinned. "Maybe," he said. "I think I can do it, though."

"Boys," she hollered in his ear. He could smell her breakfast congee on her breath, mixed with toothpaste. It made him homesick. "All right. But be careful!" She shrugged out of the jacket, revealing

220 a set of densely muscled arms, worked to lean strength on the line.

He wrapped it around his left hand, then wrapped his own coat around that, so that his hand looked like a cartoon boxing-glove, trailing sleeves flapping down beneath it.

It wasn't easy to climb the fence with one hand wrapped in a dozen

225 thicknesses of fabric, but he'd always been a great climber, even

in the village, a daring boy who'd gotten a reputation for climbing anything that stood still: trees, houses, even factories. He had one good hand, two feet, and one bandaged hand, and that was enough

to get up the fifteen feet to the top. Once there, he gingerly wrapped

230 his left hand around the razorwire, careful to pull straight down

on it and not to saw from side to side. He had a vision of himself slipping and falling, the razorwire slicing his fingers from his hand so that they fell to the other side of the fence, wriggling like worms in the dust as he clutched his mangled hand and screamed,

235 geysering blood over the girls around him.

Well, you'd better not slip, then, he thought grimly, carefully unfolding the multitool with his other hand, flipping it around like a butterfly knife (a move he'd often practiced, playing gunfighter in his room or when no one else was around at the gate). He gingerly
240 slid it around the first coil of wire and squeezed down, watching the teeth on the gears mesh and strain at one another, turning the leverage of his right hand into hundreds of pounds of pressure bearing down right at the cutting edge of the pliers. They bit into the wire, caught, and then parted it.

245 The coil of wire sprang free with a twoingggg sound, and he ducked away just in time to avoid having his nose -- and maybe his ear and eye -- sliced off by the wire.

But now he could transfer his left hand to the top of the fence, and put more weight on it, and reach for the second coil of wire
250 with the cutters, hanging way out from the fence, as far as he could, to avoid the coil when it sprang free. Which it did, parting just as easily as the other coil had, and flying directly at him, and it was only by releasing his feet and dangling one-handed from the fence, slamming his body into it, that he avoided
255 having his throat cut. As it was, the wire made a long scratch in the back of his scalp, which began to bleed freely down his back. He ignored it. Either it was shallow and would stop on its own, or

it was deep and he'd need medical attention, but either way, he was going to clear the fence top.

260 All that remained now were three strands of barbed wire, and they were tougher to cut than the razorwire had been, but the barbs were widely spaced and the wire itself was less prone to crazy twanging whipsaws than the coiled razorwire. As each one parted, there was a roar of approval from the girls below him, and even
265 though his scalp was stinging fiercely, he thought this might just be his finest hour, the first time in his life that he'd been something more than a security guard who'd left his backwards town to find insignificance in Guandong province.

And now he was able to unwind the jackets from around his hand
270 and simply hop over the fence and clamber down the other side like a monkey, grinning all the way at the horde of young girls who were coming up the other side in a great wave. It wasn't long before the girl with three more jackets caught him up. He shook out her jacket -- sliced through in four or five places -- like a waiter
275 offering a lady her coat, and she delicately slid those muscular arms into it and then she turned him around and poked at his scalp.

"Shallow," she said. "It'll bleed a lot, but you'll be OK."

She planted a sisterly kiss on his cheek. "You're a good boy,"

she said, and then ran off to join the stream of girls who were
280 entering the factory through a smashed door.

Shortly, he found himself alone in the factory yard, amid
the neat gravel pathways and the trimmed lawns. He let himself
into the factory but he couldn't actually bring himself to take
anything, though they owed him nearly three months' wages. Somehow,
285 it seemed to him that the girls who'd used the tools should have
their pick of the tools, that the men who'd cooked the meals should
have their pick of the things from the kitchens.

Finally, he settled on one of the communal bicycles that were neatly
parked near the factory gates. These were used by all the employees
290 equally, and besides, he needed to get home and walking back
with a scalp wound in the mid-day heat didn't sound like much
of a plan.

On the way home, the world seemed much changed. He'd become
a criminal, for one thing, which seemed to him to be quite a distance
295 from a security guard. But it was more than that: the air seemed
clearer (later, he read that the air was clearer, thanks to all
the factories that had shut down and the buses that had stayed
parked). Most of the shops seemed closed and the remainder were
tended by listless storekeepers who sat on their stoops or played
300 Mah-Jongg on them, though it was the middle of the day. All

the restaurants and cafes were shut. At a train-crossing, he watched an intercity train shoot past, every car jammed with young women and their bags, leaving Shilong New Town to find their way somewhere else where there was still work.

305 Just like that, in the space of just a week or two, this giant city had died. It had all seemed so incredibly powerful when he'd arrived, new paved roads and new stores and new buildings, and the factories soaring against the sky wherever you looked.

By the time he reached home -- dizzy from the aching cut
310 on his scalp, sweaty, hungry -- he knew that the magical city was just a pile of concrete and a mountain of workers' sweat, and that it had all the permanence of a dream. Somewhere, in a distant land he barely knew the name of, people had stopped buying washing machines, and so his city had died.

315 He thought he'd lie down for just the briefest of naps, but by the time he got up and gathered a few things into a duffel-bag and got back on his bike, not bothering to lock the door of his apartment behind him, the train station was barricaded, and there was a long line of refugees slogging down the road to Shenzhen, two days' walk
320 away at least. He was glad he'd taken the bicycle then. Later, he found a working ATM and drew out some cash, which was more reassuring than he'd anticipated. For a while there, it had seemed

like the world had come to an end. It was a relief to find out that it was just his little corner.

325 In Shenzhen, he'd started hanging out in Internet cafes, because they were the cheapest places to sit indoors, out of the heat, and because they were filled with young men like him, scraping by. And because he could talk to his parents from there, telling them made-up stories about his non-existent job-search, promising
330 that he'd start sending money home soon.

And that was where the guild found him, Ping and his friends, and they had this buddy on the other side of the planet, this Wei-Dong character who'd hung rapt on every turn of his tale, who'd told him that he'd written it up for a social studies report at school,
335 which made them all laugh. And he'd found happiness and work, and he'd found a truth, too: the world wasn't built on rock, but rather on sand, and it would shift forever.

Wei-Dong didn't know how much longer his father's business would last. Maybe thirty years -- but he thought it would be a lot less
340 than that. Every day, he woke in his bedroom under his Spongebob sheets and thought about which of these things he could live without, just how basic his life could get.

And here it was, the chance to find out. When his great-grandparents had been his age, they'd been war-refugees, crossing the ocean

345 on a crowded boat, travelling on stolen papers, an infant
in his great-grandmother's arms and another in her belly. If they
could do it, Wei-Dong could do it.

He'd need a place to stay, which meant money, which meant a job.

The guild would cut him in for his share of the money from the raids,
350 but that wasn't enough to survive in America. Or was it? He wondered
how much the Guatemalans around him earned at their illegal
dishwashing and cleaning and gardening jobs.

In any event, he wouldn't have to find out, because he had something
they didn't have: a Social Security Number. And yes, that meant
355 that eventually his parents would be able to find him, but in another
month, he'd be 18 and it'd be too late for them to do anything about
it if he didn't want to cooperate.

In those hours where he'd planned for the demise of his family's
fortune, he'd settled quickly on the easiest job he could step into:
360 Mechanical Turk.

The Turks were an army of workers in gamespace. All you had to do was
prove that you were a decent player -- the game had the stats to know
it -- and sign up, and then log in whenever you wanted a shift.
The game would ping you any time a player did something the game
365 didn't know how to interpret -- talked too intensely to a non-player
character, stuck a sword where it didn't belong, climbed a tree

that no one had bothered to add any details too -- and you'd have to play spot-referee. You'd play the non-player character, choose a behavior for the stabbed object, or make a decision from a menu
370 of possible things you might find in a tree.

It didn't pay much, but it didn't take much time, either. Wei-Dong had calculated that if he played two computers -- something he was sure he could keep up -- and did a new job every twenty seconds on each, he could make as much as the senior managers at his father's
375 company. He'd have to do it for ten hours a day, but he'd spent plenty of weekends playing for 12 or even 14 hours a day, so hell, it was practically money in the bank.

So he used the rented PC to sign onto his account and started filling in the paperwork to apply for the job. All the while, he was
380 conscious of his rarely-used email account and of the messages from his parents that surely awaited him. The forms were long and boring, but easy enough, even the little essay questions where you had to answer a bunch of hypothetical questions about what you'd do if a player did this or said that. And that email from his parents
385 was lurking, demanding that he download it and read it --

He flipped to a browser and brought up his email. It had been weeks since he'd last checked it and it was choked with hundreds of spams, but there, at the top:

RACHEL ROSENBAUM -- WHERE ARE YOU???

390 Of course his mother was the one to send the email. It was always
her on email, sending him little encouraging notes through
the school day, reminding him of his grandparents' and cousins' and
father's birthdays. His father used email when he had to, usually
at two in the morning when he couldn't sleep for worry about work
395 and he needed to bawl out his managers without waking them up
on the phone. But if the phone was an option, Dad would take it.

WHERE ARE YOU???

The subject-line said it all, didn't it?

Leonard, this is crazy. If you want to be treated like an adult,
400 start acting like one. Don't sneak around behind our backs, playing
games in the middle of the night. Don't run off to God-knows-where
to sulk.

We can negotiate this like family, like grownups, but first you'll
have to COME HOME and stop behaving like a SPOILED BRAT. We love you,
405 Leonard, and we're worried about you, and we want to help you. I know
when you're 17 it's easy to feel like you have all the answers --

He stopped reading and blew hot air out his nostrils. He hated
it when adults told him he only felt the way he did because he was
young. As if being young was like being insane or drunk, like
410 the convictions he held were hallucinations caused by a mental

illness that could only be cured by waiting five years. Why not just stick him in a box and lock it until he turned 22?

He began to hit reply, then realized that he was logged in without going through an anonymizer. His guildies were big into these --

415 they were servers that relayed your traffic, obscuring your identity and the addresses you were trying to avoid. The best ones came from Falun Gong, the weird religious cult that the Chinese government was bent on stamping out. Falun Gong put new relays online every hour or so, staying a hop ahead of the Great Firewall of China, the all-
420 seeing, all-knowing, all-controlling server-farm that was supposed to keep 1.6 billion Chinese people from looking at the wrong kind of information.

No one in the guild had much time for Falun Gong or its quirky beliefs, but everyone agreed that they ran a tight ship when it came
425 to punching holes in the Great Firewall. A quick troll through the ever-rotating index-pages for Falun Gong relays found Wei-Dong a machine that would take his traffic. Then he replied to his Mom. Let her try to run his backtrail -- it would dead-end with a notorious Chinese religious cult. That'd give her something to worry about
430 all right!

Mom, I'm fine. I'm acting like an adult (taking care of myself, making my own decisions). It might have been wrong to lie to you guys about

what I was doing with my time, but kidnapping your son to military school is about as non-adult as you can get. I'll be in touch when
435 I get a chance. I love you two. Don't worry, I'm safe.

Was he, really? As safe as his great-grandparents had been, stepping off the ship in New York. As safe as Lu had been, bicycling the cracked road to Shenzhen.

He'd find a place to stay -- he could google "cheap hotel downtown
440 los angeles" as well as the next kid. He had money. He had a SSN. He had a job -- two jobs, counting the guild work -- and he had plenty of practice missions he'd have to run before he'd start earning. And it was time to get down to it.

TEXTS FOR ANALYSIS

ACADEMIC PROSE

THE PHYLOGENY OF LITTLE RED RIDING HOOD

Abstract

1 Researchers have long been fascinated by the strong continuities
evident in the oral traditions associated with different cultures.
According to the 'historic-geographic' school, it is possible
to classify similar tales into "international types" and trace
5 them back to their original archetypes. However, critics argue
that folktale traditions are fundamentally fluid, and that most
international types are artificial constructs. Here, these issues
are addressed using phylogenetic methods that were originally
developed to reconstruct evolutionary relationships among biological
10 species, and which have been recently applied to a range of cultural
phenomena. The study focuses on one of the most debated international
types in the literature: ATU 333, 'Little Red Riding Hood'.
A number of variants of ATU 333 have been recorded in European
oral traditions, and it has been suggested that the group may
15 include tales from other regions, including Africa and East Asia.
However, in many of these cases, it is difficult to differentiate
ATU 333 from another widespread international folktale, ATU 123,
'The Wolf and the Kids'. To shed more light on these relationships,

data on 58 folktales were analysed using cladistic, Bayesian and
20 phylogenetic network-based methods. The results demonstrate that,
contrary to the claims made by critics of the historic-geographic
approach, it is possible to identify ATU 333 and ATU 123 as distinct
international types. They further suggest that most of the African
tales can be classified as variants of ATU 123, while the East Asian
25 tales probably evolved by blending together elements of both ATU 333
and ATU 123. These findings demonstrate that phylogenetic methods
provide a powerful set of tools for testing hypotheses about cross-
cultural relationships among folktales, and point towards exciting
new directions for research into the transmission and evolution
30 of oral narratives.

Introduction

1 The publication of Jacob and Wilhelm Grimm's Children's and Household
Tales (1812-1814) [1] two hundred years ago sparked enormous public
and academic interest in traditional stories told among "the common
people", and helped establish folklore as a field for serious
5 academic inquiry. Inspired by the Grimms' methods, a new generation
of researchers ventured outside the library and into the villages
and households of the rural peasantry to collect colourful tales
of magical beasts, wicked stepmothers, enchanted objects, and
indefatigable heroes [2]. One of the most unexpected and exciting
10 discoveries to emerge from these studies was the recurrence of many
of the same plots in the oral traditions associated with different
- and often widely separated - societies and ethnic groups. Thus,
the Brothers Grimm noted that many of the ostensibly "German"
folktales which they compiled are recognisably related to stories
15 recorded in Slavonic, Indian, Persian and Arabic oral traditions
[3]. These similarities have attracted the attention of folklorists,
literary scholars, anthropologists, cognitive scientists and others
for a variety of reasons: For example, cognate tales in other
cultures have been studied to try and reconstruct the origins and
20 forms of classic western fairy tales before they were first written

down [2] [4]. Other researchers have examined the distributions of common plot elements within and across regions to make inferences about past migration, cross-cultural contact, and the impact of geographical distance and language barriers on cultural diffusion [5] [6]. Last, it has been suggested that patterns of stability and change in stories can furnish rich insights into universal and variable aspects of the human experience, and reveal how psychological, social and ecological processes interact with one another to shape cultural continuity and diversity [7] [8] [9].

25

30 Unfortunately, since folktales are mainly transmitted via oral rather than written means, reconstructing their history and development across cultures has proven to be a complex challenge. To date, the most ambitious and sustained effort in this area has been carried out by folklorists associated with the so-called

35 "historic-geographic" school, which was established toward the end of the nineteenth century [10]. These researchers have sought to classify similar folktales from different oral literatures into distinct "international types" based on consistencies in their themes, plots and characters. The most comprehensive and up-

40 to-date reference work in this field, the Aarne-Uther-Thompson (ATU) index, identifies more than two thousand international types distributed across three hundred cultures worldwide [11]. Exponents of the historic-geographic school believed that each

international type could be traced back to an original "archetype"
45 tale that was inherited from a common ancestral population, or
spread across societies through trade, migration and conquest.
Over time, the tales' original forms were then adapted to suit
different cultural norms and preferences, giving rise to locally
distinct "ecotypes" [5]. The historic-geographic method sought
50 to reconstruct this process by assembling all the known variants
of the international type and sorting them by region and chronology.
Rare or highly localised forms were considered to be of likely
recent origin, whereas widespread forms were believed to be probably
ancient, particularly when they were consistent with the earliest
55 recorded versions of the tale [2] [4].

The historic-geographic method has been criticised for a number
of reasons [4]. First, it has been suggested that the criteria
on which international types are based are arbitrary and
ethnocentric. Most types are defined by the presence of just one
60 or two plot features ("motifs"), and gloss over dissimilarities
among tales within the same group as well as their resemblances
to tales belonging to other groups [12]. Since the majority
of international types were originally defined in relation
to the western corpus, tales from other regions are often difficult
65 to classify according to the ATU index because they lack one or
more of the key diagnostic motifs, or fall between supposedly

distinct international types [12] [13]. A second, related problem with the historic-geographic method is sampling bias. Given that European folklore traditions have been studied far more
70 intensively than any others, reconstructions based on the frequency and chronologies of variants are likely to be heavily skewed. Last of all, some researchers have suggested orally transmitted tales are too fluid and unstable to be classified into distinct groups based on common descent, and that the classification
75 of international types is often superficial [13] [14]. According to this view, the aims of the historic-geographic school are at best unrealistic, if not entirely misconceived.

This study proposes a novel approach to studying cross-cultural relationships among folktales that employs powerful, quantitative
80 methods of phylogenetic analysis. Phylogenetics was originally developed to investigate the evolutionary relationships among biological species, and has become increasingly popular in studies of cultural phenomena (dubbed "phylomemetics" [15]), including languages [16] [17] [18] [19] [20] [20], manuscript traditions
85 [21] [22] [23] and material culture assemblages [24] [25] [26] [27] [28] [29] [30] [25] [31]. In each case, the aim of a phylogenetic analysis is to construct a tree or graph that represents relationships of common ancestry inferred from shared inherited traits (homologies). Folktales represent an excellent target

90 for phylogenetic analysis because they are, almost by definition,
products of descent with modification: Rather than being composed
by a single author, a folktale typically evolves gradually over time,
with new parts of the story added and others lost as it gets passed
down from generation to generation. Recent case studies of the urban
95 legend 'Bloody Mary' [32], the 'Pygmalion' family of myths in Africa
[33], and western European variants of the folktale 'The Kind and
the Unkind Girls' [6] have demonstrated the utility of phylogenetic
techniques for reconstructing relationships among variants within
a given tale type. The present study aims to establish whether these
100 methods can also be used to differentiate the tale types themselves,
and test the empirical validity of the international type system.
In addressing this question, phylogenetics has several advantages
over traditional historic-geographic methods. First, rather than
basing the classification of related tales on just a few privileged
105 motifs, phylogenetic analysis can take into account all the features
that a researcher believes might be relevant. Second, phylogenetic
reconstruction does not assume a-priori that the most common form
of a trait, or the form exhibited by the oldest recorded variant, is
necessarily ancestral. It is therefore likely to be less vulnerable
110 to the strong European bias in the folktale record than traditional
historic-geographic methods. Third, phylogenetics provides useful
tools for quantifying the relative roles of descent versus

other processes, such as convergence and contamination, in generating similarities among taxa. These include statistical techniques
115 for measuring how well patterns in a dataset fit a tree-like model of descent [34], and network-based phylogenetic methods that have been designed to capture conflicting relationships [35], [36]. Such methods make it possible to evaluate the coherence and degree of overlap between international types indicated by the analyses.

120 The study focuses on one of the most famous and controversial international types in the folktale literature, ATU 333 - 'Little Red Riding Hood' [37] [38]. Most versions of the story in modern popular culture are derived from the classic literary tale published by Charles Perrault in seventeenth century France [39], which recounts
125 the misadventures of a young girl who visits her grandmother's house, where she is eaten by a wolf disguised as the old woman. It is widely believed that Perrault based his text on an old folktale known simply as 'The Story of Grandmother', versions of which have survived in the oral traditions of rural France, Austria and northern Italy
130 [38]. In many of these tales, the girl lacks her characteristic red hood and nickname, and manages to outwit the wolf before he can eat her: After finally seeing through the villain's disguise, the girl asks to go outside to the toilet. The wolf reluctantly agrees, but ties a rope to her ankle to prevent her from escaping. When
135 she gets out, the girl cuts the rope, ties the end to a tree, and

flees into the woods before the villain realises his mistake. Another variant of the plot has the young girl - commonly named Catterinella - taking a basket of cakes to her aunt/uncle, who turns out to be a witch or werewolf. On the way there, she eats the cakes and replaces

140 them with donkey dung. When the aunt/uncle discovers her deception, (s) he comes to her house at night and devours her in bed. Although these tales were recorded long after Perrault published his version, a rediscovered 11th century poem written in Latin by a priest in Liège provides intriguing evidence that a story similar to Little Red Riding

145 Hood was circulating in parts of western Europe in medieval times [40]. The poem, which purports to be based on a local folktale, tells of a girl who wanders into the woods wearing a red baptism tunic given to her by her godfather. She encounters a wolf, who takes her back to its lair, but the girl manages to escape by taming the wolf's cubs.

150 Highly similar stories to Little Red Riding Hood have been recorded in various non-western oral literatures. These include a folktale that is popular in Japan, China, Korea and other parts of East Asia known as 'The Tiger Grandmother' [41] [42], in which a group of siblings spend the night in bed with a tiger or monster

155 who poses as their grandmother. When the children hear the sound of their youngest sibling being eaten, they trick the villain into letting them outside to go to the toilet, where, like the heroine of The Story of Grandmother, they manage to escape.

Another tale, found in central and southern Africa [43] [44], tells
160 of a girl who is attacked by an ogre after he imitates the voice
of her brother. In some cases, the victim is cut out of the ogre's
belly alive - an ending that echoes some variants of Little Red
Riding Hood recorded in Europe, including a famous text published
by the Brothers Grimm in nineteenth century Germany [1].

165 Despite these similarities, it is not clear whether these tales can
in fact be classified as ATU 333. Some writers [44] [45] [46] suggest
they may belong to another international tale type, ATU 123, The Wolf
and the Kids, which is popular throughout Europe and the Middle
East. In this tale, a nanny goat warns her kids not to open
170 the door while she is out in the fields, but is overheard by a wolf.
When she leaves, the wolf impersonates her and tricks the kids
into letting him in, whereupon he devours them. Versions of the tale
occur in collections of Aesop's fables, in which the goat kid avoids
being eaten by heeding the mother's instruction not to open the door,
175 or seeks further proof of the wolf's identity before turning him
away. In an Indian cognate of The Wolf and the Kids, known as 'The
Sparrow and the Crow', the villain tricks the mother into letting
her into the house, and eats her hatchlings during the night.

Although ATU 123 is believed to be closely related to ATU 333, it is
180 classified as a separate international tale type on the basis of two
distinguishing features. First, ATU 333 features a single victim

who is a human girl, whereas ATU 123 features multiple victims (a group of siblings) who are animals. Second, in ATU 333 the victim is attacked in her grandmother's house, while in ATU 123 the victims
185 are attacked in their own home. However, the application of these criteria to non-western oral traditions is highly problematic: Thus, in most of the African tales the victim is a human girl (grouping them with ATU 333), but she is attacked in her own home rather than a relative's (grouping them with ATU 123). The East
190 Asian tales also feature human protagonists (ATU 333), but they are usually a group of siblings rather than a single child (ATU 123). In most variants of the tale, they are attacked after being left at home by their mother (ATU 123), but in some cases they encounter the villain en route to their grandmother's house (as per ATU 333).
195 The ambiguities surrounding the classification of the East Asian and African tales exemplify the problems of current folklore taxonomy. While ATU 333 and ATU 123 are easy to discriminate between in a western context, tales from other regions share characteristics with both types and do not comfortably fit the definitions of either.
200 With that in mind, the present study addresses two key questions: Can the tales described above be divided into phylogenetically distinct international types? If so, should the African and East Asian tales be classified as variants of ATU 333 or ATU 123?

205 Data for the study were drawn from 58 variants of ATU 333/123
available in English translation from 33 populations (listed in Table
S1). The tales comprise a representative sample of the geographic
distribution of ATU 333/123 type tales (Figure 1), and the plot
variations described in regional tale-type and motif indices [11]
210 [41] [42] [44]. Relationships among the tales were reconstructed
using three methods of phylogenetic analysis: cladistics, Bayesian
inference and NeighbourNet (see Methods for a full description).
The analyses focused on 72 plot variables, such as character
of the protagonist (single child versus group of siblings; male
215 versus female), the character of the villain (wolf, ogre, tiger,
etc.), the tricks used by the villain to deceive the victim (false
voice, disguised paws, etc.), whether the victim is devoured, escapes
or is rescued, and so on. A full list of characters and explanation
of the coding scheme is provided in the Supporting Information (File
220 S1), together with the character matrix (File S2).

Results

1 The cladistic analysis returned 5740 equally most parsimonious
trees (MPTs). The fit between the data and the trees was measured
with the Retention Index, which was calculated as 0.72. Figure
2 shows a consensus tree representing relationships that were
5 present in the majority of the MPTs and levels of support for them
returned in a bootstrap analysis. The tree, which is unrooted,
splits the tales into three principal groups. The first group
corresponds to international type ATU 333, which was present in 62%
of the cladograms generated from the bootstrap replicates. The group
10 comprises the 11th century Liège tale and three recognised sub-types
of ATU 333: variants of Catterinella (with bootstrap support of 84%),
variants of The Story of Grandmother (61% bootstrap support), and
variants of the familiar tale Little Red Riding Hood (20% bootstrap
support). The latter include two non-European tales, one from Iran,
15 the other collected from the Ibo of Nigeria. The analyses separated
Catterinella from the other tales, and suggest that the 11th
century Liège tale diverged from the lineage leading to Little Red
Riding Hood before the latter split from the oral tale The Story
of Grandmother. The Little Red Riding Hood clade separates Perrault's
20 classic version from more recent versions, including the Grimms'

18th century German text. However, the low levels of bootstrap support indicate a substantial degree of conflicting signal surrounding these relationships. The second major group can be identified as international type ATU 123. This group is less well supported than the ATU 333 group, being present in only 49% of the cladograms generated from the bootstrap analysis (although it was present in all of the MPTs returned by the original analysis). The first split (with bootstrap support of 59%) in this lineage separates the Indian tale of the Sparrow and the Crow from the others. The remaining tales split into two lineages, one leading to a pair of Aesopic fables (53% bootstrap support), the other leading to the folktale The Wolf and the Kids (59% bootstrap support). The latter includes a clade comprising the African tales, together with a tale recorded in Antigua (24% bootstrap support). The third major group is formed by the East Asian tales. This group was the least well supported in the bootstrap analysis (35%), and does not appear to contain any robust sub-groups larger than two taxa.

The Bayesian analysis returned a very similar set of results. Figure 3 shows an unrooted maximum clade credibility tree obtained from the posterior distribution. It represents the same three major groupings, with varying levels of support in the posterior distribution of trees. The ATU 333 group is again the most strongly supported, being present in 87% of the tree sample. Tales within

this group cluster into the same recognised sub-types of ATU 333
45 that were returned in the cladistic analysis, including Catterinella
(with posterior support of 94%), The Story of Grandmother (94%) and
Little Red Riding Hood (54%), with the Liège tale forming a separate
branch. Compared to the ATU 333 group, support for the ATU 123
group is relatively modest at 55%. Relationships within the group
50 separate variants of the Aesopic fable from the other narratives.
The latter clade (51% posterior probability) includes European and
Middle Eastern variants of The Wolf and the Kids, the Indian tale
of the Sparrow and the Crow, and a clade comprising the African
tales (55% posterior probability). The final major grouping consists
55 of the East Asian tales, which has a posterior probability of 64%.
Relationships within this group generally lack resolution, except
for one clade that clusters two tales from Korea (TG12 and TG13)
with one from Myanmar (TG14) (71% posterior probability).
The NeighbourNet graph is shown in Figure 4. Once again, the tales
60 are divided into the same three main groups, except the Indian tale,
which does not cluster with any of them. Although the groups are
clearly discernible, the overlapping boxes demonstrate conflicting
splits in the data. This is especially clear in the East Asian clade,
which exhibits a highly reticulated structure. Similarly, overlapping
65 boxes obscure the phylogenetic structure within the ATU 123 group,
although it is possible to identify a split between the fable and

folktale versions of the story, with the latter again including a clade of African tales (plus the Antiguan variant). The ATU 333 group, meanwhile, divides into two relatively well defined branches, one comprising variants of Catterinella and the medieval Liège tale, the other variants of Little Red Riding Hood and The Story of Grandmother (which each forming a distinct clade). Estimates of the overall tree-likeness/boxiness of the network yielded an average delta score of 0.3 and Q-residual score of 0.03.

Discussion

1 Comparative cross-cultural studies of folklore have long been
dogged by debates concerning the durability and integrity of oral
traditions. While proponents of the historic-geographic approach
have suggested that similar tales from different cultures can be
5 grouped into distinct “international types” based on common origins,
critics have insisted that folktales are too fluid and unstable to be
classified into groups based on descent [14]. To address this problem,
the present study employed three methods of phylogenetic
reconstruction together with several techniques for quantifying
10 the relative contributions of descent versus other processes
in generating relationships between Little Red Riding Hood and
other similar tales from around the world.

Overall, the results demonstrate a high degree of consistency
in the groupings returned by the cladistic, Bayesian and NeighbourNet
15 analyses. The “treelikeness” of these traditions appears to be
relatively strong compared to other datasets. The RI of the most
parsimonious trees (0.72) returned by the cladistic analysis is
higher than the mean RI of both the cultural ($n = 21$, mean = 0.59)
and biological ($n = 21$, mean = 0.61) datasets analysed by Collard et
20 al. [47]. Simulations of cultural evolutionary processes carried out

by Nunn et al. [48] suggest that datasets that return RIs of 0.60 and above are likely to have been mainly generated by branching phylogenesis. The average delta score (0.3) and Q-residual (0.03) of conflicting signal among taxa measured on the NeighbourNet graph also suggest that the data are quite tree-like. These figures are within the range of values obtained from linguistic cognate vocabulary sets reported in Gray et al. [36], and are actually lower (i.e. more tree-like) than typological features. However, it is worth noting that it is possible to obtain lower values than the ones reported here from datasets that include known borrowings and even hybrid languages. For example, Gray et al. report that a splits graph of 12 Indo-European languages based on data including loan words and the creole language Sranan yielded an average delta score of 0.23 and a Q-residual of 0.03. In other words, while relationships among the folktales fit a branching model of descent quite well, borrowing and blending could have potentially played a more significant role than indicated by the RI of the MPTs. This would be consistent with the low bootstrap support and posterior probabilities for some of the clades returned by the cladistic and Bayesian analyses. Like the NeighbourNet graph, both these analyses indicate conflicting signal surrounding the East Asian group, as well as among geographically proximate variants of ATU 333 and ATU 123.

However, it is important to emphasise that even when there is a substantial degree of blending and/or convergence among lineages, it is still possible to reconstruct robust cultural phylogenies [48], [49]. In this case, the accuracy of the relationships depicted in Figures 2, 3, and 4 is supported by qualitative evidence regarding the historiography of the tales. Thus, all three analyses identified Little Red Riding Hood, The Story of Grandmother and Catterinella as a single tale type that is distinct from The Wolf and the Kids, which folklorists believe to be a more distantly related tale [11]. In accordance with the chronological record, relationships within the ATU 333 group indicate that Little Red Riding Hood and the Story of Grandmother are descended from a common ancestor that existed more recently than the last ancestor they share with the 11th century Liège poem, [40]. The position of the Grimms' version of Little Red Riding Hood supports historiographical evidence that it is directly descended from Perrault's earlier tale (via a literate informant of French Huguenot extraction) [37]. The results of the analyses also concur with the literary record on The Wolf and the Kids, which suggests the tale evolved from an Aesopic fable which was first recorded around 400 AD [46]. All three analyses indicate that Aesopic versions of the tale - in which the victim sees through the villain's disguise before letting him through the door - diverged at an early point in the history of the lineage, prior to the existence of the last

common ancestor shared by other variants of The Wolf and the Kids.

In sum, the consistency of the relationships returned by different phylogenetic methods, their fit to the data, and their compatibilities with independent lines of folklore research provide compelling

70 evidence that - contrary to the claim that the vagaries of oral transmission are bound to wipe out all traces of descent in folktales - it is possible to establish coherent narrative traditions over large geographical distances and historical periods.

While these findings broadly support the goals of historic-geographic

75 approaches to folklore, they also demonstrate that phylogenetic analysis can help resolve some the problems arising from more traditional methods. As mentioned previously, one of the key problems with existing folklore taxonomy is that it defines international types in reference to European type specimens on the basis of just

80 a few traits. In this case, African and East Asian tales are grouped with Little Red Riding Hood because they feature human protagonists, and with The Wolf and the Kids because the villain attacks the victims in their own home, rather than their grandmother's. The phylogenetic approach used here, on the other hand, defines types in reference

85 to the tales' inferred common ancestors rather than any existing variants, and uses all the traits they exhibit as potential evidence for their relationships. This approach yielded clear evidence that the African tales are more closely related to The Wolf and

the Kids than they are to Little Red Riding Hood. All the analyses
90 clustered the African stories with ATU 123. The sole exception was
an Ibo tale, which grouped with European variants of Little Red
Riding Hood, thus endorsing the collector's belief that the story is
not of local origin, but an Ibo oral translation of the western fairy
tale [50]. The other African tales, on the other hand, seem to have
95 been derived from the European/Middle Eastern tale of The Wolf and
the Kids, perhaps as a result of trade or colonialism. The tale was
subsequently modified to create a novel redaction that spread across
central and southern societies on the continent, and even as far
as Antigua. Although bootstrap and posterior support for this clade
100 was relatively modest, it is remarkable that the phylogenetic signal
in this tradition was sufficiently strong to be detected by all
three analyses, despite the massive cultural and human upheavals
that occurred during the forced displacement of African populations
during the slave trade.

105 The East Asian tales, meanwhile, did not cluster with ATU 333 or
ATU 123, but formed a separate group. Since there is no evidence
to suggest they share a more recent common ancestor with The Wolf
and the Kids or Little Red Riding Hood, they cannot be classified as
members of either international type. One intriguing possibility
110 raised in the literature on this topic that would be consistent
with these results is that the East Asian tales represent a sister

lineage that diverged from ATU 333 and ATU 123 before they evolved into two distinct groups. Thus, Dundes has proposed that the East Asian tradition represents a crucial "missing link" between ATU 333 and ATU 123 that has retained features from their original archetype [38]. A more detailed exposition of this theory has been set out by the Sinologist Barend J. ter Haar [51]. Noting that the The Tiger Grandmother encompasses a spectrum of more ATU 333-like variants and more ATU 123-like variants, Haar argues that the East Asian tales represent an ancient autochthonous tale type that is ancestral to the other two. On the basis of qualitative comparisons among these and other Asian tales, he conjectures that the tale originated in China and spread westwards to the Middle East and Europe between the twelfth and fourteenth century, a period during which there were extensive trade and cultural exchanges between east and west. At some unspecified later point, the tale type split into the lineages that gave rise to Little Red Riding Hood and the Wolf and the Kids. Although it is tempting to interpret the results of the analyses in this light, there are several problems with this theory. First, the earliest known version of the East Asian tale was recorded sometime in the early eighteenth century by the Chinese writer Huang Zhijun [52], thirteen hundred years after the publication of the earliest Aesopic version of ATU 123 [46], and eight centuries after the medieval variant of ATU 333 was written in Liège [40].

135 Of course, as mentioned previously, literary evidence about
the origins of oral tales can be unreliable and biased toward Europe.
However, at the very least, the existence of ATU 123 in first century
Europe means that the putative Asian ancestral tale type would
have to had to have spread west long before the opening of trade
140 routes in the twelfth to fourteenth centuries, as suggested by Haar
[51]. Second, if ATU 333 and ATU 123 are more closely related
to each other than they are to the East Asian tales, they would
be expected to share derived characters (i.e. novel story traits)
that would have evolved after they diverged from the East Asian
145 tradition. However, there is not a single characteristic shared
by these two tale types that does not also occur in the East Asian
group. Third, there is little evidence to support the contention
that resemblances between the East Asian tales and ATU 333 and ATU
123 are primitive. If that were the case, we would expect earlier
150 versions of ATU 123 and ATU 333 to be more similar to the East
Asian tales than later variants, as original elements of the story
would be lost or substituted as each tradition evolved. However,
this prediction is contradicted by the available chronological
data on the tales' histories. For example, some Chinese tales
155 feature an episode that occurs in many versions of The Wolf and
the Kids in which the children, suspecting that the villain may not
really be their mother/grandmother, ask him to show them his hand

through the door before letting him in. In ATU 123, this test first appears in a version of the fable recorded in the fourteenth century [46], and is lacking in the original version. Similarly, 160 in Japanese, Korean and some Chinese tales the villain drinks oil/spring water to clear his throat after his initial attempts to impersonate the children's mother's voice failed. An almost identical episode occurs in variants of The Wolf and the Kids (and 165 is also present in the African tales), in which the wolf drinks something or cuts his tongue to smooth out his voice. However, it does not appear in any recorded versions prior to the publication of the Grimms' Children and Household Tales in 1812 [1].

Similarities between the East Asian tales and ATU 333 are similarly 170 lacking in the earliest variant, the medieval poem from Liège. They include the famous dialogue in which the victim (s) questions the "grandmother" about her strange appearance ("What big eyes you have!"), the rescue by a passing woodcutter, and the victim's escape, in which she tricks the villain into letting her go outside 175 to go to the toilet. The latter trait has excited particular interest among folklorists, since it occurs in the oral tale The Story of Grandmother and not in Little Red Riding Hood (where the girl gets eaten). The presence of this same episode in the East Asian tradition has been cited as one of the main pieces of evidence that The Story

180 of Grandmother is a more archaic version of the tale than Perrault's, making its absence in the Liège tale all the more conspicuous.

Bearing in mind the limitations of relying on chronological evidence about the evolution of folktales, we should consider the possibility that neither the Liège tale, nor the Aesopic fable, 185 provide accurate representations of the early forms of ATU 333 and ATU 123, leave alone their last common ancestor. To investigate the evolution of these similarities more rigorously, the ancestral states of the traits discussed above were reconstructed on the tale phylogenies (see Methods for details). The results are shown in Table 190 1 below. The analyses indicate that the aforementioned similarities between the East Asian tales and ATU 333 and ATU 123 were highly unlikely to have been present in the putative archetype shared by the latter two groups, contradicting the hypothesis that the East Asian tales provide a "missing link" between the two traditions.

195 An alternative - and, to the best of this author's knowledge, novel - explanation for the relationship of the East Asian tales to ATU 333 and ATU 123 is that the former is derived from the latter two, rather than vice versa. This would mean that The Tiger Grandmother represents a "hybrid" tale type, which evolved by blending together 200 elements from ATU 333 and ATU 123 type tales. This hypothesis would account for the finding that important traits shared by the East

Asian tales and Little Red Riding Hood and The Wolf and the Kids are not ancestral, suggesting that they were borrowed instead. Given the number and striking nature of these resemblances, it seems unlikely that they could have evolved independently. Borrowing is also consistent with patterns of conflicting signal in the NeighbourNet graph, which appear to be especially prevalent around the East Asian group. This impression is confirmed by a comparison of taxon-specific delta scores and Q-residuals, which are higher on average for the East Asian tales than other tales. The average delta score of the East Asian tales is 0.31 compared to an average of 0.28 for the other taxa, while their average Q-residual is 0.04 compared to 0.02. To investigate this hypothesis further, another set of analyses were carried out in which the East Asian tales were removed from the data (along with the characters that were only present in this group). It was reasoned that if these tales evolved by blending together elements of ATU 333 and ATU 123 then their removal should result in a more phylogenetically robust distinction between these two groups. This prediction was tested by maximum parsimony bootstrapping and Bayesian inference. For reference, consensus trees derived from both analyses are presented in the Supporting Information, together with a NeighbourNet graph excluding the East Asian tales (Figures S1, S2 and S3). Bootstrap support for the clade separating ATU 333 from ATU 123

225 increased from 62% to 83%, while the Bayesian posterior probability
rose from 87% to 98%. Thus, both analyses indicate that the East
Asian tales are a source of conflicting signal in the data, in line
with the hybridisation hypothesis.

While on current evidence this appears to be the best available
230 explanation for the relationships between the East Asian group
and ATU 333 and ATU 123, questions remain about how, where and
when the latter two tale types were adopted and combined. Based
on the similarities described above, it seems likely to have occurred
sometime between the origin of the lineage leading to Little Red
235 Riding Hood and The Story of Grandmother, but before the publication
of Perrault's classic tale in 1697. Shortly after this, Huang
Zhiyun published the first known version of The Tiger Grandmother
[52], which shares elements in common with The Story of Grandmother
(such as the "toilet excuse" to escape the villain), but lacks any
240 of the features specifically associated with Little Red Riding Hood
(e.g. the girl with the red hood, her being devoured by the villain,
etc.), suggesting he is unlikely to have been influenced by Perrault.
Given the antiquity and wide geographic diffusion of The Wolf and
the Kids, it is certainly plausible that ATU 123 would have also
245 reached China by this time, perhaps between the twelfth and fourteenth
centuries, i.e. period of east-west cultural exchanges discussed
by Haar [51]. Given the current state of the evidence, such scenarios

are necessarily speculative. However, the digitisation and translation of an ever increasing number of folklore collections from Asia, as well
250 as other regions, promise to yield a wealth of new data with which to investigate these questions more thoroughly in the future.

In the meantime, this case study has shown that phylogenetic methods provide powerful tools for analysing cross-cultural relationships among folktales that can be used to classify groups based on common
255 ancestry, reconstruct their evolutionary histories, and identify patterns of contamination and hybridisation across traditions.

While these goals are clearly of crucial importance to comparative studies of folklore, they also have potentially exciting applications in other fields too. As previous researchers have pointed out,
260 the faithful transmission of narratives over many generations and across cultural and linguistic barriers is a rich source of evidence about the kinds of information that we find memorable and motivated to pass on to others [9] [53] [54]. In the present case, stories like Little Red Riding Hood, The Tiger Grandmother and The Wolf
265 and the Kids would seem to embody several features identified in experimental studies as important cognitive attractors in cultural evolution. These include “minimally counterintuitive concepts” (e.g. talking animals) [54], “survival relevant information” (e.g. the danger presented by predators, both literal and metaphorical;
270 the importance of following a parent’s instructions, etc.) [9] [55],

and “social information bias” (e.g. trust, kinship relationships, deception and false belief, etc.) [56]. Phylogenetic inference and ancestral state reconstruction methods, such as those used here, provide valuable techniques for investigating the magnitude of these

275 biases in preserving and/or distorting narratives over long periods of time using real-world data. Equally, these methods could be applied to explore how tales are influenced by cultural, rather than psychological, selection pressures. Such an analysis might address whether local modifications of different tale-types exhibit consistent

280 patterns, and see if they covary with specific ecological, political or religious variables. Future work on these questions promises to generate important insights into the evolution of oral traditions, and open new lines of communication between anthropologists, psychologists, biologists and literary scholars.

Methods

1 **Phylogenetic Reconstruction**

Cladistic analysis employs a branching model of evolution that clusters taxa on the basis of shared derived (evolutionarily novel) traits. Using the principle of parsimony, it involves finding the tree that minimises the total number of character state changes required to explain the distribution of character states among the taxa, known as the "shortest length tree" or "most parsimonious tree". To search for the most parsimonious tree (MPT), the present analysis employed an efficient tree-bisection-reconnection algorithm implemented by the heuristic search option in PAUP 4 [57], carrying out 1,000 replications to ensure a thorough exploration of tree-space. The fit between the data and the MPTs was assessed using the Retention Index (RI) and maximum parsimony bootstrapping. The RI is a measure of how well similarities among a group of taxa can be explained by the retention of shared derived traits on a given tree [34]. A maximum RI of 1 indicates that all similarities can be interpreted as shared derived traits, without requiring additional explanations, such as losses, independent evolution or borrowing. As the contribution of these latter processes increase, generating

similarities that conflict with the tree, the RI will approach 0.

Maximum parsimony bootstrapping is a technique for measuring support for individual clades [58]. It involves carrying out cladistic analyses of pseudoreplicate datasets generated by randomly resampling characters with replacement from the original matrix. Support for the clades returned by the original analysis is then estimated by calculating the frequency with which they occur in the most parsimonious trees obtained from the pseudoreplicates. The bootstrap analyses reported here were carried out in PAUP 4 [57] using heuristic searches of 1,000 replicates.

Bayesian inference proceeds by calculating the likelihood of the data given an initially random tree topology, set of branch lengths and model of character evolution, and iteratively modifies each of these parameters in a Markov Chain Monte Carlo (MCMC) simulation. Moves that improve the likelihood of the data are always accepted, while those that do not are usually rejected (although some may occasionally be accepted within a certain threshold so as to avoid getting trapped in local optima). Following an initial "burn in" period, the likelihood scores will plane out and parameters will fluctuate between similar values, at which point trees are sampled at regular intervals to generate the "posterior distribution". Unlike the trees output by a cladistic analysis, which are based on a single optimality criterion (i.e. parsimony),

the posterior distribution of trees represents a set of phylogenetic
45 hypotheses that explain the distribution of character states among
the taxa under a range of plausible evolutionary assumptions.
The posterior distribution of trees can be summarised by a consensus
tree or "maximum clade credibility tree", while posterior
probabilities for individual clades are calculated based on their
50 frequency in the tree sample. The Bayesian approach has been
found to be particularly effective when there is wide variance
in the amount of evolution that has occurred in different regions
of the character data or tree, since it explicitly incorporates
these parameters (i.e. branch lengths and substitution model)
55 into the analysis [59]. The Bayesian analyses reported here
were carried out in MrBayes 3.2 [60] using the model settings
for "standard" (morphological) data, with the character coding
set to "variable" and variance in rates of character evolution
estimated under a gamma distribution. Two analyses were carried out
60 simultaneously, each using four MCMC chains that were run for 1
million generations. Trees were sampled every 1000 generations
to avoid autocorrelation, with the first 25% of the sample discarded
as burnin. Log likelihood values for the remaining trees in each
sample were then graphed as a scatterplot to check that the two runs
65 had converged.

As with the other two methods, NeighbourNet clusters taxa into hierarchically nested sets. However, unlike cladistics and Bayesian inference, it does not employ a strict branching model of descent with modification, and as such these sets can overlap and intersect with one another. Accordingly, it is claimed that NeighbourNet is better able to capture conflicting signal in a dataset resulting from borrowing and blending among evolutionary lineages [35]. The method involves calculating pairwise distances between the taxa based on the character data, and generating a series of weighted splits that are successively combined using an agglomerative clustering algorithm. Relationships among the taxa are represented by a network diagram, or "splits graph", which shows groupings in the data and distances separating them. Where the splits are highly consistent, the diagram will resemble a branching tree-like structure. Incompatible splits, on the other hand, produce box-like structures that lend a more latticed appearance to the network. The extent of reticulation in the folktale network was quantified using the delta-score and Q-residual score [36], [61]. Both measures calculate conflicting signal by comparing path lengths among pairs of taxa on "quartets" (subsets of four taxa) selected from the network. Quartets are scored from 0 to 1 according to how resolved the splits between each pair of taxa are, with values closer to 0 being more tree-like and values closer to 1 more reticulate.

The estimation of the delta score includes a normalisation constant, whereas Q-residuals had to be normalised by rescaling all between-taxa distances in the network so that they average 1. The NeighbourNet analysis and calculation of d-scores and Q-residuals were carried out in SplitsTree v4.13 [35].

95 **Ancestral state reconstruction**

Character states were reconstructed in the putative last common ancestor of ATU 123 and ATU 333 tales through parsimony analysis and Bayesian inference. In the parsimony analysis, the most parsimonious trees (MPTs) from the cladistic analysis were re-rooted so as to make ATU 123 and ATU 333 monophyletic, with the East Asian group forming a sister clade. Next, the evolutionary history of each character was reconstructed on the MPTs by minimising the total number of changes required by each tree. The ancestral state inferred for the last common ancestor of ATU 123/333 tales was then recorded for each tree. The parsimony analyses were carried out in the software program Mesquite, using the Character Trace module [62]. In the Bayesian analysis, phylogenetic relationships among the taxa were reconstructed using a topological prior that forced ATU 333 and ATU 123 to be monophyletic (making the clade present in 100%

of the posterior distribution of trees). The analysis was carried out in MrBayes 3.2 [60], with the other model settings being the same as those used in the original analysis, in which the evolutionary rate across characters was allowed to vary under a gamma distribution.

115 Estimated ancestral states in the last common ancestor of ATU
123/333 were sampled every 1000 generations to avoid autocorrelation,
with the first 25% of the sample discarded as burnin. The average
probabilities for each state were summarised using the Report
Ancestral State command (report ancstates = yes), integrating
120 uncertainty in the topological structure of the rest of the tree as
well as other model parameters.

A [wikid]

GLOSSARY OF SYNTAX

ADJECTIVE PHRASE

An **adjective phrase** is a phrase whose head word is an adjective, e.g. *fond of steak*, *very happy*, *quite upset about it*, etc. The adjective in an adjective phrase can initiate the phrase (e.g. *fond of steak*), conclude the phrase (e.g. *very happy*), or appear in a medial position (e.g. *quite upset about it*). The dependents of the head adjective – i.e. the other words and phrases inside the adjective phrase – are typically adverbs or prepositional phrases, but they can also be clauses (e.g. *louder than you do*). Adjectives and adjective phrases function in two basic ways in clauses, either attributively or predicatively. When they are attributive, they appear inside a noun phrase and modify that noun phrase, and when they are predicative, they appear outside of the noun phrase that they modify and typically follow a linking verb (copula).

ADVERB PHRASE

An **adverb phrase** is a linguistic term for a group of two or more words operating adverbially, when viewed in terms of their syntactic function. Adverb(ial) phrases (“AdvP” in syntactic trees) are phrases that do the work of an adverb in a sentence.

ADVERBIAL

An **adverbial** a word (an adverb) or a group of words (an adverbial phrase or an adverbial clause) that modifies or tells us something about the sentence or the verb. The word *adverbial* is also used as an adjective, meaning “having the same function as an adverb”.

In English, adverbials most commonly take the form of adverbs, adverb phrases, temporal noun phrases or prepositional phrases. Many types of adverbials (for instance reason and condition) are often expressed by clauses.

*James answered **immediately**.* (adverb)

*James answered **in English**.* (prepositional phrase)

*James answered **this morning**.* (noun phrase)

*James answered in English **because he had a foreign visitor**.* (adverbial clause)

The following basic types of adverbials can be recognized:

- adjuncts (circumstance adverbials): these are part of the core meaning of the sentence, but if omitted still leave a meaningful sentence.
*John and Sophia helped me **with my homework**.*
- disjuncts (stance adverbials): these make comments on the meaning of the rest of the sentence.
***Surprisingly**, he passed all of his exams.*
- conjuncts (linking adverbials): these link two sentences together.
*John helped so I was, **therefore**, able to do my homework.*

APPOSITION

Apposition is a grammatical construction in which two elements, normally noun phrases, are placed side by side, with one element serving to define or modify the other. When this device is used, the two elements are said to be *in apposition*. For example, in the phrase “my friend Alice”, the name “Alice” is in apposition to “my friend”.

CLAUSE

A **clause** is the smallest grammatical unit that can express a complete proposition. A typical clause consists of a subject and a predicate, where the predicate is typically a verb phrase – a verb together with any objects and other modifiers. However the subject is sometimes not expressed; this is often the case in null-subject languages if the subject is retrievable from context, but it also occurs in certain cases in other languages such as English (as in imperative sentences and non-finite clauses).

A simple sentence usually consists of a single finite clause with a finite verb that is independent. More complex sentences may contain multiple clauses. Main clauses (i.e., *matrix clauses*, *independent clauses*) are those that can stand alone as a sentence. Subordinate clauses (i.e., *embedded clauses*, *dependent clauses*) are those that would be awkward or incomplete alone.

CLAUSE CONSTITUENT

English is an SVO language, that is, in simple declarative sentences the order of the main components (constituents) is *subject–verb–object(s)* (or *subject–verb–complement*).

A typical finite clause consists of a noun phrase functioning as the subject, a finite verb, followed by any number of dependents of the verb. In some theories of grammar the verb and its dependents are taken to be a single component called a verb phrase or the predicate of the clause; thus the clause can be said to consist of subject plus predicate.

Dependents include any number of complements (especially a noun phrase functioning as the object), and other modifiers of the verb. Noun phrase constituents which are personal pronouns or (in formal registers) the pronoun *who(m)* are marked for case, but otherwise it is word order alone that indicates which noun phrase is the subject and which the object.

The presence of complements depends on the pattern followed by the verb (for example, whether it is a transitive verb, i.e. one taking a direct object). A given verb may allow a number of possible patterns (for example, the verb *write* may be either transitive, as in *He writes letters*, or intransitive, as in *He writes often*).

Some verbs can take two objects: an indirect object and a direct object. An indirect object precedes a direct one, as in *He gave the dog a bone* (where *the dog* is the indirect object and *a bone* the direct object). However the indirect object may also be replaced with a prepositional phrase, usually with the preposition *to* or *for*, as in *He gave a bone to the dog*. (The latter method is particularly common when the direct object is a personal pronoun and the indirect object is a stronger noun phrase: *He gave it to the dog* would be used rather than *?He gave the dog it*.)

Adverbial adjuncts are often placed after the verb and object, as in *I met John yesterday*. However other positions in the sentence are also possible. Another adverb which is subject to special rules is the negating word *not*.

Objects normally precede other complements, as in *I told him to fetch it* (where *him* is the object, and the infinitive phrase *to fetch it* is a further complement). Other possible complements include prepositional phrases, such as *for Jim* in the clause *They waited for Jim*; predicative expressions, such as *red* in *The ball is red*; subordinate clauses, which may be introduced by a subordinating conjunction such as *if*, *when*, *because*, *that*, for example the *that*-clause in *I suggest that you wait for her*; and non-finite clauses, such as *eating jelly* in the sentence *I like eating jelly*.

English is not a “pro-drop” (specifically, null-subject) language – that is, unlike some languages, English requires that the subject of a clause always be expressed explicitly, even if it can be deduced from the form of the verb and the context, and even if it has no meaningful referent, as in the sentence *It is raining*, where the subject *it* is a dummy pronoun. Imperative and non-finite clauses are exceptions, in that they usually do not have a subject expressed.

Adjuncts are constituents which are not required by the main verb, and can be removed without leaving behind something ungrammatical. Adjuncts are usually adverbs or adverbial phrases or clauses.

Many clauses have as their finite verb an auxiliary, which governs a non-finite form of a lexical (or other auxiliary) verb.

CLEFT SENTENCE

A **cleft sentence** is a complex sentence (one having a main clause and a dependent clause) that has a meaning that could be expressed by a simple sentence. Clefts typically put a particular constituent into focus. This focusing is often accompanied by a special intonation.

In English, a cleft sentence can be constructed as follows:

it + conjugated form of *to be* + *X* + subordinate clause

where *it* is a cleft pronoun and *X* is usually a noun phrase (although it can also be a prepositional phrase, and in some cases an adjectival or adverbial phrase). The focus is on *X*, or else on the subordinate clause or some element of it. For example:

It's Joey (whom) we're looking for.

It's money that I love.

It was from John that she heard the news.

It was meeting Jim that really started me off on this new line of work.

COMPLEMENT

In grammar and linguistics, the term **complement** is used with different meanings, so it is difficult to give a single precise definition and explanation. In a broad general sense however, a complement can be understood as a word, phrase or clause that is necessary to *complete* the meaning of a given expression.

In many traditional grammars, the terms *subject complement* and *object complement* are employed to denote the predicative expressions (e.g. predicative adjectives and nominals) that serve to assign a property to a subject or object, e.g.

Ryan is **upset**. – Predicative adjective as subject complement

Rachelle is **the boss**. – Predicative nominal as subject complement

That made Michael **lazy**. – Predicative adjective as object complement

We call Rachelle **the boss**. – Predicative nominal as object complement

CONCORD (AGREEMENT)

Agreement or **concord** happens when a word changes form depending on the other words to which it relates. It is an instance of inflection, and usually involves making the value of some grammatical category (such as gender or person) “agree” between varied words or parts of the sentence.

For example, in Standard English, one may say *I am* or *he is*, but not “I is” or “he am”. This is because the grammar of the language requires that the verb and its subject agree in *person*. The pronouns *I* and *he* are first and third person respectively, as are the verb forms *am* and *is*. The verb form must be selected so that it has the same person as the subject.

The agreement based on overt grammatical categories as above is **formal agreement**, in contrast to notional agreement, which is based on meaning. For instance, the phrase *The United States* is treated as singular for purposes of agreement, even though it is formally plural.

CONSTITUENT

A **constituent** is a word or a group of words that functions as a single unit within a hierarchical structure. The analysis of constituent structure is associated mainly with phrase structure grammars, although dependency grammars also allow sentence structure to be broken down into constituent parts. The constituent structure of sentences is identified using *constituency tests*. These tests manipulate some portion of a sentence and based on the result, clues are delivered about the immediate constituent structure of the sentence. Many constituents are phrases. A phrase is a sequence of two or more words built around a head lexical item and working as a unit within a sentence.

COORDINATION

Coordination is a frequently occurring complex syntactic structure that links together two or more elements, known as *conjuncts* or *conjoins*. The presence of coordination is often signaled by the appearance of a coordinator (coordinating conjunction), e.g. *and*, *or*, *but* (in English). The totality of coordinator(s) and conjuncts forming an instance of coordination is called a coordinate structure. The unique properties of coordinate structures have motivated theoretical syntax to draw a broad distinction between coordination and subordination. Coordination is one of the most studied fields in theoretical syntax, but despite decades of intensive examination, theoretical accounts differ significantly and there is no consensus about the best analysis.

Coordination is a very flexible mechanism of syntax. Any given lexical or phrasal category can be coordinated. The examples throughout this entry employ the convention whereby the conjuncts of coordinate structures are marked using square brackets and bold script. The coordinate structure each time includes all the material that follows the left-most square bracket and precedes the right-most square bracket. The coordinator appears in normal script between the conjuncts.

- [**Sarah**] and [**Xolani**] went to town – N + N
 [**The chicken**] and [**the rice**] go well together. – NP + NP
 The president will [**understand**] and [**agree**]. – V + V
 The president will [**understand the criticism**] and [**take action**] – VP + VP
 Insects were [**in**], [**on**], and [**under**] the bed. – P + P + P
 [**After the announcement**] but [**before the game**], there was a celebration. – PP + PP
 Susan works [**slowly**] and [**carefully**]. – Adv + Adv
 Susan works [**too slowly**] and [**overly carefully**]. – AdvP + AdvP
 We appreciated [**that the president understood the criticism**] and [**that he took action**]. – Clause + Clause

Data of this sort could easily be expanded to include every lexical and phrasal category. An important aspect of these data is that the conjuncts each time are indisputably constituents. In other words, the material enclosed in brackets would qualify as a constituent in both phrase structure grammars and dependency grammars.

COPULAR VERB

A **copular verb** is a word used to link the subject of a sentence with a predicate (a subject complement), such as the word *is* in the sentence “The sky **is** blue.” The word *copula* derives from the Latin noun for a “link” or “tie” that connects two different things.

A copula is often a verb or a verb-like word, though this is not universally the case. A verb that is a copula is sometimes called a **copulative** or **copular verb**. In English primary education grammar courses, a copula is often called a **linking verb**. In other languages, copulas show more resemblances to pronouns, as in Classical Chinese and Guarani, or may take the form of suffixes attached to a noun, as in Beja, Ket, and Inuit languages.

Most languages have one main copula (although some, like Spanish, Portuguese and Thai, have more than one, and some have none). In the case of English, this is the verb *to be*. While the term *copula* is generally used to refer to such principal forms, it may also be used to refer to some other verbs with similar functions, like *become*, *get*, *feel* and *seem* in English (these may also be called “semi-copulas” or “pseudo-copulas”).

COREFERENCE

Coreference occurs when two or more expressions in a text refer to the same person or thing; they have the same referent, e.g. *Bill_i said he_i would come*; the proper noun *Bill* and the pronoun *he* refer to the same person, namely to Bill. Coreference is the main concept underlying binding phenomena in the field of syntax. The theory of binding explores the syntactic relationship that exists between coreferential expressions in sentences and texts. When two expressions are coreferential, the one is usually a full form (the antecedent) and the other is an abbreviated form (a proform or anaphor). Linguists use indices to show coreference, as with the *i* index in the example *Bill_i said he_i would come*. The two expressions with the same reference are *coindexed*, hence in this example *Bill* and *he* are coindexed, indicating that they should be interpreted as coreferential.

When exploring coreference, there are numerous distinctions that can be made, e.g. anaphora, cataphora, split antecedents, coreferring noun phrases, etc. When dealing with proforms (pronouns, pro-verbs, pro-adjectives, etc.), one distinguishes between anaphora and cataphora. When the proform follows the expression to which it refers, anaphora is present (the proform is an anaphor), and when it precedes the expression to which it refers, cataphora is present (the proform is a cataphor). These notions all illustrated as follows:

Anaphora

- a) *The music_i was so loud that it_i couldn't be enjoyed*. – The anaphor *it* follows the expression to which it refers (its antecedent).
- b) *Our neighbors_i dislike the music*. If *they_i* are angry, the cops will show up soon. – The anaphor *they* follows the expression to which it refers (its antecedent).

Cataphora

- a) If *they_i* are angry about the music, *the neighbors_i* will call the cops. – The cataphor *they* precedes the expression to which it refers (its postcedent).
- b) Despite *her_i* difficulty, *Wilma_i* came to understand the point. – The cataphor *her* precedes the expression to which it refers (its postcedent)

Split antecedents

- a) *Carol_i told Bob_i to attend the party*. *They_i* arrived together. – The anaphor *they* has a split antecedent, referring to both Carol and Bob.
- b) When *Carol_i* helps *Bob_i* and *Bob_i* helps *Carol_i*, *they_i* can accomplish any task. – The anaphor *they* has a split antecedent, referring to both Carol and Bob.

DEPENDENCY GRAMMAR

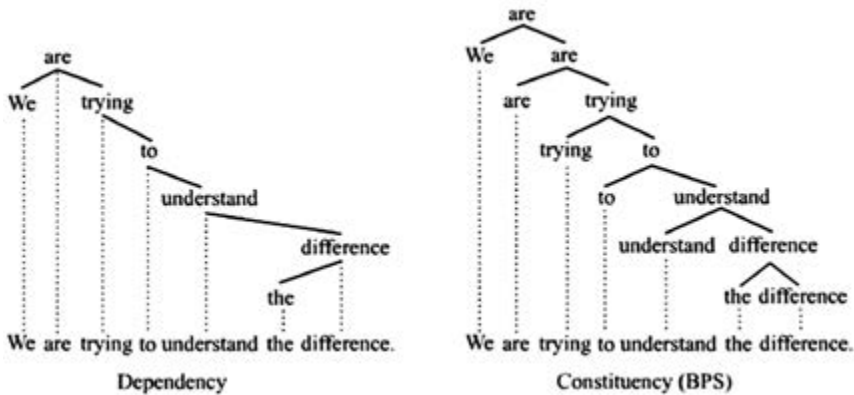
Dependency grammar is a class of modern syntactic theories that are all based on the dependency relation and that can be traced back primarily to the work of Lucien Tesnière. The dependency relation views the (finite) verb as the structural center of all clause structure. All other syntactic units (e.g. words) are either directly or indirectly dependent on the verb. DGs are distinct from phrase structure grammars (constituency grammars), since DGs lack phrasal nodes – although they acknowledge phrases. Structure is determined by the relation between a word (a head) and its dependents. Dependency structures are flatter than constituency structures in part because they lack a finite verb phrase constituent, and they are thus well suited for the analysis of languages with free word order, such as Czech and Turkish.

The following frameworks are dependency-based:

- Algebraic syntax
- Operator grammar
- Functional generative description
- Lexicase grammar
- Meaning–text theory
- Word grammar
- Extensible dependency grammar

Dependency vs. constituency

Dependency is a one-to-one correspondence: for every element (e.g. word or morph) in the sentence, there is exactly one node in the structure of that sentence that corresponds to that element. The result of this one-to-one correspondence is that dependency grammars are word (or morph) grammars. All that exist are the elements and the dependencies that connect the elements into a structure. This situation should be compared with the constituency relation of phrase structure grammars. Constituency is a one-to-one-or-more correspondence, which means that, for every element in a sentence, there are one or more nodes in the structure that correspond to that element. The result of this difference is that dependency structures are minimal compared to their constituency structure counterparts, since they tend to contain many fewer nodes.



These two trees illustrate just two possible ways to render the dependency and constituency relations (see below). The dependency tree is an “ordered” tree, i.e. it reflects actual word order. Many dependency trees abstract away from linear order and focus just on hierarchical order, which means they do not show actual word order. The constituency tree follows the conventions of bare phrase structure (BPS), whereby the words themselves are employed as the node labels.

The distinction between dependency- and constituency-based grammars derives in a large part from the initial division of the clause. The constituency relation derives from an initial binary division, whereby the clause is split into a subject noun phrase (NP) and a predicate verb phrase (VP). This division is certainly present in the basic analysis of the clause that we find in the works of, for instance, Leonard Bloomfield and Noam Chomsky. Tesnière, however, argued vehemently against this binary division, preferring instead to position the verb as the root of all clause structure. Tesnière’s stance was that the subject-predicate division stems from term logic and has no place in linguistics. The importance of this distinction is that if one acknowledges the initial subject-predicate division in syntax as something real, then one is likely to go down the path of constituency grammar, whereas if one rejects this division, then the only alternative is to position the verb as the root of all structure, which means one has chosen the path of dependency grammar.

DETERMINER (DETERMINATIVE)

A **determiner (determinative)** is a word, phrase or affix that occurs together with a noun or noun phrase and serves to express the reference of that noun or noun phrase in the context. That is, a determiner may indicate whether the noun is referring to a definite or indefinite element of a class, to a closer or more distant element, to an element belonging to a specified person or thing, to a particular number or quantity, etc. Common kinds of determiners include definite

and indefinite articles (like the English *the* and *a[n]*), demonstratives (like *this* and *that*), possessive determiners (like *my* and *their*), and quantifiers (like *many*, *few* and *several*). Examples:

- **The** girl is **a** student.
- I've lost **my** keys.
- **Some** folks get all **the** luck.
- **Which** book is that?
- I only had **thirty-seven** drinks.
- I'll take **this** one.
- **Both** windows were open.

Most determiners have been traditionally classed along with adjectives, and this still occurs: for example, demonstrative and possessive determiners are sometimes described as *demonstrative adjectives* and *possessive adjectives* respectively. However, modern theorists of grammar prefer to distinguish determiners as a separate word class from adjectives, which are simple modifiers of nouns, expressing attributes of the thing referred to. This distinction applies particularly in languages like English which use definite and indefinite articles, frequently as a necessary component of noun phrases – the determiners may then be taken to be a class of words which includes the articles as well as other words that function in the place of articles. (The composition of this class may depend on the particular language's rules of syntax; for example, in English the possessives *my*, *your* etc. are used without articles and so can be regarded as determiners, whereas their Italian equivalents *mio* etc. are used together with articles and so may be better classed as adjectives.) Not all languages can be said to have a lexically distinct class of determiners.

DETERMINER PHRASE

A **determiner phrase** is a type of phrase posited by some theories of syntax. The head of a DP is a determiner, as opposed to a noun. For example in the phrase *the car*, *the* is a determiner and *car* is a noun; the two combine to form a phrase, and on the DP-analysis, the determiner *the* is head over the noun *car*. The existence of DPs is a controversial issue in the study of syntax. The traditional analysis of phrases such as *the car* is that the noun is the head, which means the phrase is a noun phrase (NP), not a determiner phrase. Beginning in the mid 1980s, an alternative analysis arose that posits the determiner as the head, which makes the phrase a DP instead of an NP.

In the determiner phrases below, the determiners are in **boldface**:

- **a** little dog, **the** little dogs (*indefinite or definite articles*)
- **my** little dog, **your** little dogs (*possessives*)
- **this** little dog, **those** little dogs (*demonstratives*)
- **every** little dog, **each** little dog, **no** dog (*quantifiers*)

The DP-analysis of phrases such as *the car* is the majority view in generative grammar today (Government and Binding and Minimalist Program), but is a minority stance in the study of syntax and grammar in general. Most frameworks outside of generative grammar continue to assume the traditional NP analysis of noun phrases. For instance, representational phrase structure grammars assume NP, e.g. Head-Driven Phrase Structure Grammar, and most dependency grammars such as Meaning-Text Theory, Functional Generative Description, Lexicase Grammar also assume the traditional NP-analysis of noun phrases, Word Grammar being the one exception. Construction Grammar and Role and Reference Grammar also assume NP instead of DP. Furthermore, the DP-analysis does not reach into the teaching of grammar in schools in the English-speaking world, and certainly not in the non-English-speaking world.

DISCOURSE FUNCTION

Sentence (or **discourse**) **function** refers to a speaker's purpose in uttering a specific sentence, phrase, or clause. Whether a listener is present or not is sometimes irrelevant. It answers the question: "Why has this been said?" The four basic sentence functions in the world's languages include the *declarative*, *interrogative*, *exclamative*, and the *imperative*. These correspond to a *statement*, *question*, *exclamation*, and *command* respectively. Typically, a sentence goes from one function to the next through a combination of changes in word order, intonation, the addition of certain auxiliaries or particles, or other times by providing a special verbal form.

ELLIPSIS

Ellipsis (from the Greek: ἔλλειψις, *élleipsis*, "omission") or **elliptical construction** refers to the omission from a clause of one or more words that are nevertheless understood in the context of the remaining elements. There are numerous distinct types of ellipsis acknowledged in theoretical syntax. Theoretical accounts of ellipsis can vary greatly depending in part upon whether a constituency-based or a dependency-based theory of syntactic structure is pursued.

GRAMMATICAL FUNCTION (RELATION)

Grammatical relations (= **grammatical functions, grammatical roles, syntactic functions**) refer to functional relationships between constituents in a clause. The standard examples of grammatical functions from traditional grammar are subject, direct object, and indirect object. In recent times, the syntactic functions (more generally referred to as grammatical relations), typified by the traditional categories of subject and object, have assumed an important role in linguistic theorizing, within a variety of approaches ranging from generative grammar to functional and cognitive theories. Many modern theories of grammar are likely to acknowledge numerous further types of grammatical relations (e.g. complement, specifier, predicative, etc.).

HEAD

The **head** of a phrase is the word that determines the syntactic type of that phrase or analogously the stem that determines the semantic category of a compound of which it is a part. The other elements modify the head and are therefore the head's *dependents*. Headed phrases and compounds are endocentric, whereas exocentric ("headless") phrases and compounds (if they exist) lack a clear head. Heads are crucial to establishing the direction of branching. Head-initial phrases are right-branching, head-final phrases are left-branching, and head-medial phrases combine left- and right-branching. Examine the following expressions:

big red **dog**
bird**song**

The word *dog* is the **head** of *big red dog*, since it determines that the phrase is a noun phrase, not an adjective phrase. Because the adjectives *big* and *red* modify this head noun, they are its *dependents*. Similarly, in the compound noun *birdsong*, the stem *song* is the head, since it determines the basic meaning of the compound. The stem *bird* modifies this meaning and is therefore dependent on *song*. The *birdsong* is a kind of song, not a kind of bird. The heads of phrases like the ones here can often be identified by way of constituency tests. For instance, substituting a single word in for the phrase *big red dog* requires the substitute to be a noun (or pronoun), not an adjective.

Trees

Many theories of syntax represent heads by means of tree structures. These trees tend to be organized in terms of one of two relations: either in terms of the *constituency* relation of phrase structure grammars or the *dependency* relation of dependency grammars. Both relations are illustrated with the following trees:



The constituency relation is shown on the left and the dependency relation on the right. The a- trees identify heads by way of category labels, whereas the b-trees use the words themselves as the labels. The noun *stories* (N) is the head over the adjective *funny* (A). In the constituency trees on the left, the noun projects its category status up to the mother node, so that the entire phrase is identified as a noun phrase (NP). In the dependency trees on the right, the noun projects only a single node, whereby this node dominates the one node that the adjective projects, a situation that also identifies the entirety as an NP. The b-trees are structurally the same as their a-counterparts, the only difference being that a different convention is used for marking heads and dependents. The conventions illustrated with these trees are just a couple of the various tools that grammarians employ to identify heads and dependents. While other conventions abound, they are usually similar to the ones illustrated here.

INVERSION

Inversion is any of several grammatical constructions where two expressions switch their canonical order of appearance, that is, they invert. The most frequent type of inversion in English is subject–auxiliary inversion, where an auxiliary verb changes places with its subject; this often occurs in questions, such as *Are you coming?*, where the subject *you* is switched with the auxiliary *are*. In many other languages – especially those with freer word order than English – inversion can take place with a variety of verbs (not just auxiliaries) and with other syntactic categories as well.

When a layered constituency-based analysis of sentence structure is used, inversion often results in the discontinuity of a constituent, although this would not be the case with a flatter dependency-based analysis. In this regard inversion has consequences similar to those of shifting.

Inversion in English

In broad terms, one can distinguish between two major types of inversion in English that involve verbs: *subject–auxiliary inversion* and *subject–verb inversion*. The difference between these two types resides with the nature of the verb involved, i.e. whether it is an auxiliary verb or a full verb.

Subject–auxiliary inversion

The most frequently occurring type of inversion in English is subject–auxiliary inversion. The subject and auxiliary verb invert, i.e. they switch positions, e.g.

- a) *Fred will stay.*
- b) *Will Fred stay?* – Subject–auxiliary inversion with yes/no question
- a) *Larry has done it.*
- c) *What has Larry done?* – Subject–auxiliary inversion with constituent question
- a) *Fred has helped at no point.*
- d) *At no point has Fred helped.* – Subject–auxiliary inversion with fronted expression containing negation (negative inversion)
- a) *If we were to surrender,...*
- e) *Were we to surrender,...* – Subject–auxiliary inversion in condition clause

The default order in English is subject–verb (SV), but a number of meaning-related differences (such as those illustrated above) motivate the subject and auxiliary verb to invert so that the finite verb precedes the subject; one ends up with auxiliary–subject (Aux-S) order. This type of inversion fails if the finite verb is not an auxiliary:

- a) *Fred stayed.*
- b) **Stayed Fred?* – Inversion impossible here because the verb is NOT an auxiliary verb

Subject–verb inversion

The verb in cases of subject–verb inversion in English is not required to be an auxiliary verb; it is, rather, a full verb or a form of the copula *be*. If the sentence has an auxiliary verb, the subject is placed after the auxiliary *and* the main verb. For example:

- a) *A unicorn will come into the room.*
- b) *Into the room will come a unicorn.*

Since this type of inversion generally places the focus on the subject, the subject is likely to be a full noun or noun phrase rather than a pronoun. Third-person personal pronouns are especially unlikely to be found as the subject in this construction. For example:

- a) *Down the stairs came the dog.* – Noun subject
- b) *?Down the stairs came it.* – Third-person personal pronoun as subject; unlikely unless it has special significance and is stressed
- c) *Down the stairs came I.* – First-person personal pronoun as subject; more likely, though still I would require stress

MODIFIER

A **modifier** is an optional element in phrase structure or clause structure. A modifier is so called because it is said to *modify* (change the meaning of) another element in the structure, on which it is dependent. Typically the modifier can be removed without affecting the grammar of the sentence. For example, in the English sentence *This is a red ball*, the adjective *red* is a modifier, modifying the noun *ball*. Removal of the modifier would leave *This is a ball*, which is grammatically correct and equivalent in structure to the original sentence.

Other terms used with a similar meaning are **qualifier** (the word *qualify* may be used in the same way as *modify* in this context), **attribute**, and adjunct. These concepts are often distinguished from *complements* and *arguments*, which may also be considered dependent on another element, but are considered an indispensable part of the structure. For example, in *His face became red*, the word *red* might be called a complement or argument of *became*, rather than a modifier or adjunct, since it cannot be omitted from the sentence.

Modifiers may come either before or after the modified element (the *head*), depending on the type of modifier and the rules of syntax for the language in question. A modifier placed before the head is called a **premodifier**; one placed after the head is called a **postmodifier**.

For example, in *land mines*, the word *land* is a premodifier of *mines*, whereas in the phrase *mines in wartime*, the phrase *in wartime* is a postmodifier of *mines*. A head may have a number of modifiers, and these may include both premodifiers and postmodifiers. For example:

that nice tall man from Canada whom you met

In this noun phrase, *man* is the head, *nice* and *tall* are premodifiers, and *from Canada* and *whom you met* are postmodifiers.

Notice that in English, simple adjectives are usually used as premodifiers, with occasional exceptions such as *galore* (which always appears after the noun) and the phrases *time immemorial* and *court martial* (the latter comes from French, where most adjectives are postmodifiers). Sometimes placement of the adjective after the noun entails a change of meaning: compare *a responsible person* and *the person responsible*, or *the proper town* (the appropriate town) and *the town proper* (the area of the town as properly defined).

It is sometimes possible for a modifier to be separated from its head by other words, as in *The man came who you bumped into in the street yesterday*, where the relative clause *who...yesterday* is separated from the word it modifies (*man*) by the word *came*. This type of situation is especially likely in languages with free word order.

NON-FINITE CLAUSE

A **non-finite clause** is a dependent clause whose verb is non-finite; for example, many languages can form non-finite clauses from infinitives, participles and gerunds. Like any dependent (subordinate) clause, a non-finite clause serves a grammatical role – commonly that of a noun, adjective, or adverb – in a greater clause that contains it.

A typical finite clause consists of a verb together with its objects and other dependents (i.e. a verb phrase or predicate), along with its subject (although in certain cases the subject is not expressed). A non-finite clause is similar, except that the verb must be in a non-finite form (such as an infinitive, participle, gerund or gerundive), and it is consequently much more likely that there will be no subject expressed, i.e. that the clause will consist of a (non-finite) verb phrase on its own.

NOUN PHRASE

A **noun phrase (nominal phrase)** is a phrase which has a noun (or indefinite pronoun) as its head word, or which performs the same grammatical function as such a phrase. Noun phrases are very common cross-linguistically, and they may be the most frequently occurring phrase type.

Noun phrases often function as verb subjects and objects, as predicative expressions, and as the complements of prepositions. Noun phrases can be embedded inside each other; for instance, the noun phrase *some of his constituents* contains the shorter noun phrase *his constituents*.

In some modern theories of grammar, noun phrases with determiners are analyzed as having the determiner rather than the noun as their head; they are then referred to as *determiner phrases*.

OBJECT

Traditional grammar defines the **object** in a sentence as the entity that is acted upon by the subject. There is thus a primary distinction between subjects and objects that is understood in terms of the action expressed by the verb, e.g. *Tom studies grammar* – *Tom* is the subject and *grammar* is the object. Traditional theories of sentence structure divide the simple sentence into a subject and a predicate, whereby the object is taken to be part of the predicate. Many modern theories of grammar (e.g. dependency grammars), in contrast, take the object to be a verb argument like the subject, the difference between them being mainly just their prominence; the subject is ranked higher than the object and is thus more prominent.

The main verb in a clause determines if and what objects are present. Transitive verbs require the presence of an object, whereas intransitive verbs block the appearance of an object. The term *complement* overlaps in meaning with *object*, although the two are not completely synonymous. The objects that verbs do and do not take is explored in detail in valency theory.

PHRASE

A **phrase** is a group of words (or sometimes a single word) that form a constituent and so function as a single unit in the syntax of a sentence. A phrase is lower on the grammatical hierarchy than a clause.

Examine the following sentence:

***The house at the end of the street** is red.*

The words in bold form a phrase; together they act like a noun (making them a noun phrase). This phrase can be further broken down; a prepositional phrase functioning as an adjective can be identified:

at the end of the street

Further, a smaller prepositional phrase can be identified inside this greater prepositional phrase:

of the street

And within the greater prepositional phrase, one can identify a noun phrase:

the end of the street

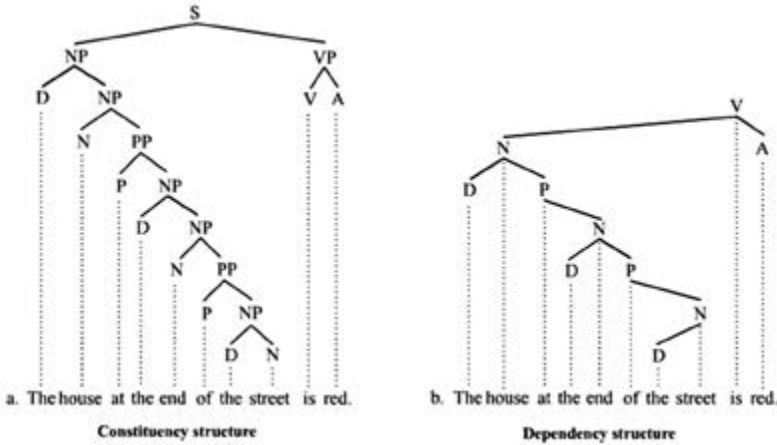
And within this noun phrase, there is a smaller noun phrase:

the street

Phrases can be identified by constituency tests such as proform substitution (=replacement). The prepositional phrase *at the end of the street*, for instance, could be replaced by an adjective such as *nearby*: *the nearby house* or even *the house nearby*. *The end of the street* could also be replaced by another noun phrase, such as *the crossroads* to produce *the house at the crossroads*.

Many theories of syntax and grammar represent sentence structure using trees. The trees provide schematic illustrations of how the words of sentences are grouped. These representations show the words, phrases, and at times clauses that make up sentences. Any word combination that corresponds to a complete subtree can be seen as a phrase. There are two competing

principles for producing trees, constituency and dependency. Both of these principles are illustrated here using the example sentence from above. The constituency-based tree is on the left, and the dependency-based tree on the right:



The constituency-based tree on the left is associated with a traditional phrase structure grammar, and the tree on the right is one of a dependency grammar. The node labels in the trees (e.g. N, NP, V, VP) mark the syntactic category of the constituents. Both trees take a phrase to be any combination of words that corresponds to a complete subtree. In the constituency tree on the left, each phrasal node (marked with P) identifies a phrase; there are therefore 8 phrases in the constituency tree. In the dependency tree on the right, each node that dominates one or more other nodes corresponds to a phrase; there are therefore 5 (or 6 if the whole sentence is included) phrases in the dependency tree. What the trees and the numbers demonstrate is that theories of syntax differ in what they deem to qualify as a phrase. The constituency tree takes three word combinations to be phrases (*house at the end of the street*, *end of the street*, and *is red*) that the dependency tree does not judge to be phrases. Which of the two tree structures is more plausible can be determined in part by empirical considerations, such as those delivered by constituency tests.

The common use of the term “phrase” is different from that employed by some phrase structure theories of syntax.

PHRASE STRUCTURE GRAMMAR

The term **phrase structure grammar** was originally introduced by Noam Chomsky as the term for grammars as defined by phrase structure rules, i.e. rewrite rules of the type studied previously by Emil Post and Axel Thue. Some authors, however, reserve the term for more restricted grammars in the Chomsky hierarchy: context-sensitive grammars, or context-free grammars. In a broader sense,

phrase structure grammars are also known as *constituency grammars*. The defining trait of phrase structure grammars is thus their adherence to the constituency relation, as opposed to the dependency relation of dependency grammars.

In linguistics, phrase structure grammars are all those grammars that are based on the constituency relation, as opposed to the dependency relation associated with dependency grammars; hence phrase structure grammars are also known as constituency grammars. Any of several related theories for the parsing of natural language qualify as constituency grammars, and most of them have been developed from Chomsky's work, including

- Government and Binding Theory,
- Generalized Phrase Structure Grammar,
- Head-Driven Phrase Structure Grammar,
- Lexical Functional Grammar,
- The Minimalist Program, and
- Nanosyntax.

Further grammar frameworks and formalisms also qualify as constituency-based, although they may not think of the themselves as having spawned from Chomsky's work, e.g.

- Arc Pair Grammar and
- Categorical Grammar.

The fundamental trait that these frameworks all share is that they view sentence structure in terms of the constituency relation. The constituency relation derives from the subject-predicate division of Latin and Greek grammars that is based on term logic and reaches back to Aristotle in antiquity. Basic clause structure is understood in terms of a binary division of the clause into subject (noun phrase NP) and predicate (verb phrase VP).

PREDICATE

The **predicate** in traditional grammar is inspired by propositional logic of antiquity (as opposed to the more modern predicate logic). A predicate is seen as a property that a subject has or is characterized by. A predicate is therefore an expression that can be *true of* something. Thus, the expression "is moving" is true of those things that are moving. This classical understanding of predicates was adopted more or less directly into Latin and Greek grammars and from there it made its way into English grammars, where it is applied directly to the analysis of sentence structure. It is also the understanding of predicates in English-language dictionaries. The predicate is one of the two main parts of a sentence (the other being the subject, which the predicate modifies). The predicate must contain a verb, and the verb requires, permits, or precludes other sentence elements to complete the predicate.

These elements are: objects (direct, indirect, prepositional), predicatives, and adjuncts:

She dances. – verb-only predicate

Ben reads the book. – verb + direct object predicate

Ben's mother, Felicity, gave me a present. – verb + indirect object + direct object predicate

She listened to the radio. – verb + prepositional object predicate

They elected him president. – verb + object + predicative noun predicate

She met him in the park. – verb + object + adjunct predicate

She is in the park. – verb + predicative prepositional phrase predicate

Most modern theories of syntax and grammar take their inspiration for the theory of predicates from predicate calculus as associated with Gottlob Frege. This understanding sees predicates as relations or functions over arguments. The predicate serves either to assign a property to a single argument or to relate two or more arguments to each other. Sentences consist of predicates and their arguments (and adjuncts) and are thus predicate-argument structures, whereby a given predicate is seen as linking its arguments into a greater structure. This understanding of predicates sometimes renders a predicate and its arguments in the following manner:

Bob laughed. → laughed (Bob) or, laughed = f (Bob)

Sam helped you. → helped (Sam, you)

Jim gave Jill his dog. → gave (Jim, Jill, his dog)

PREPOSITIONAL PHRASE

Prepositional phrases have a preposition as the central element of the phrase, i.e. as the head of the phrase. The remaining part of the phrase, usually a noun (phrase) or pronoun, is sometimes called the *prepositional complement*.

SENTENCE

A **sentence** is a grammatical unit consisting of one or more words that are grammatically linked. A sentence can include words grouped meaningfully to express a statement, question, exclamation, request, command or suggestion.

A sentence can also be defined in orthographic terms alone, i.e., as anything which is contained between a capital letter and a full stop. For instance, the opening of Charles Dickens' novel *Bleak House* begins with the following three sentences:

London. Michaelmas term lately over, and the Lord Chancellor sitting in Lincoln's Inn Hall. Implacable November weather.

The first sentence involves one word, a proper noun. The second sentence has only a non-finite verb. The third is a single nominal group. Only an orthographic definition encompasses this variation.

As with all language expressions, sentences might contain function and content words and contain properties distinct to natural language, such as characteristic intonation and timing patterns.

Sentences are generally characterized in most languages by the presence of a finite verb, e.g. “The quick brown fox *jumps* over the lazy dog”.

One traditional scheme for classifying English sentences is by clause structure, the number and types of clauses in the sentence with finite verbs.

- A *simple sentence* consists of a single independent clause with no dependent clauses.
- A *compound sentence* consists of multiple independent clauses with no dependent clauses. These clauses are joined together using conjunctions, punctuation, or both.
- A *complex sentence* consists of one independent clause and at least one dependent clause.
- A *complex-compound sentence* (or *compound-complex sentence*) consists of multiple independent clauses, at least one of which has at least one dependent clause.

SUBJECT

The **subject** is, according to a tradition that can be traced back to Aristotle (and that is associated with phrase structure grammars), one of the two main constituents of a clause, the other constituent being the predicate, whereby the predicate says something about the subject. According to a tradition associated with predicate logic and dependency grammars, the subject is the most prominent overt argument of the predicate. By this position all languages with arguments have subjects, though there is no way to define this consistently for all languages. From a functional perspective, a subject is a phrase that conflates nominative case with the topic. Many languages (such as those with ergative or Austronesian alignment) do not do this, and so do not have subjects.

All of these positions see the subject in English determining person and number agreement on the finite verb, as exemplified by the difference in verb forms between *he eats* and *they eat*. The stereotypical subject immediately precedes the finite verb in declarative sentences in English and represents an agent or a theme. The subject is often a multi-word constituent and should be distinguished from parts of speech, which, roughly, classify words within constituents.

SUBORDINATION

Subordination is a principle of the hierarchical organization of linguistic units. While the principle is applicable in semantics, syntax, morphology, and phonology, most work in linguistics employs the term “subordination” in the context of syntax, and that is the context in which it is considered here. The syntactic units of sentences are often either subordinate or coordinate to each other. Hence an understanding of subordination is promoted by an understanding of coordination, and vice versa.

Subordination as a concept of syntactic organization is associated closely with the distinction between *coordinate* and *subordinate* clauses. One clause is subordinate to another, if it depends on it. The dependent clause is called a *subordinate clause* and the independent clause is called the *main clause* (= matrix clause). Subordinate clauses are usually introduced by subordinators (= subordinate conjunctions) such as *after, because, before, if, so that, that, when, while*, etc. For example:

***Before we play again**, we should do our homework.*

*We are doing our homework now **because we want to play again**.*

The strings in bold are subordinate clauses, and the strings in non-bold are the main clauses. Sentences must consist of at least one main clause, whereas the number of subordinate clauses is hypothetically without limitation. Long sentences that contain many subordinate clauses are characterized in terms of hypotaxis, the Greek term meaning the grammatical arrangement of “unequal” constructs (*hypo*=“beneath”, *taxis*=“arrangement”). Sentences that contain few or no subordinate clauses but that may contain coordinated clauses are characterized in terms of parataxis.

SYNTAX

Syntax (from Ancient Greek σύνταξις “coordination” from σύν *syn*, “together,” and τάξις *táxis*, “an ordering”) is “the study of the principles and processes by which sentences are constructed in particular languages.”

In addition to referring to the discipline, the term *syntax* is also used to refer directly to the rules and principles that govern the sentence structure of any individual language. Modern research in syntax attempts to describe languages in terms of such rules. Many professionals in this discipline attempt to find general rules that apply to all natural languages.

The term *syntax* is also used to refer to the rules governing the behavior of mathematical systems, such as formal languages used in logic.

THEMATIC RELATION

In a number of theories of linguistics, **thematic relations** is a term used to express the role that a noun phrase plays with respect to the action or state described by a sentence's verb. For example, in the sentence "Susan ate an apple", Susan is the doer of the eating, so she is an agent; the apple is the item that is eaten, so it is a patient. While most modern linguistic theories make reference to such relations in one form or another, the general term, as well as the terms for specific relations, varies; ,participant role', ,semantic role', and ,deep case' have been used analogously to ,thematic relation'.

Here is a list of the major thematic relations.

- **Agent:** deliberately performs the action (e.g., *Bill ate his soup quietly.*).
- **Experiencer:** the entity that receives sensory or emotional input (e.g. *Susan heard the song. I cried.*).
- **Theme:** undergoes the action but does not change its state (e.g., *We believe in many gods. I have two children. I put the book on the table. He gave the gun to the police officer.*) (Sometimes used interchangeably with patient.)
- **Patient:** undergoes the action and changes its state (e.g., *The falling rocks crushed the car.*). (Sometimes used interchangeably with theme.)
- **Instrument:** used to carry out the action (e.g., *Jamie cut the ribbon with a pair of scissors.*).
- **Force or Natural Cause:** mindlessly performs the action (e.g., *An avalanche destroyed the ancient temple.*).
- **Location:** where the action occurs (e.g., *Johnny and Linda played carelessly in the park. I'll be at Julie's house studying for my test.*).
- **Direction or Goal:** where the action is directed towards (e.g., *The caravan continued on toward the distant oasis. He walked to school.*).
- **Recipient:** a special kind of goal associated with verbs expressing a change in ownership, possession. (E.g., *I sent John the letter. He gave the book to her.*)
- **Source or Origin:** where the action originated (e.g., *The rocket was launched from Central Command. She walked away from him.*).
- **Time:** the time at which the action occurs (e.g., *The rocket was launched yesterday.*).
- **Beneficiary:** the entity for whose benefit the action occurs (e.g., *I baked Reggie a cake. He built a car for me. I fight for the king.*).
- **Manner:** the way in which an action is carried out (e.g., *With great urgency, Tabitha phoned 911.*).
- **Purpose:** the reason for which an action is performed (e.g., *Tabitha phoned 911 right away in order to get some help.*).
- **Cause:** what caused the action to occur in the first place; not *for what*, rather *because of what* (e.g., *Because Clyde was hungry, he ate the cake.*).

There are no clear boundaries between these relations. For example, in "the hammer broke the window", some linguists treat hammer as an agent, some others as instrument, while some others treat it as a special role different from these.

THEME / RHEME

In linguistics, the **topic**, or **theme**, of a sentence is what is being talked about, and the **comment** (**rheme** or **focus**) is what is being said about the topic. That the information structure of a clause is divided in this way is generally agreed on, but the boundary between topic/theme depends on grammatical theory.

The difference between “topic” and grammatical subject is that topic is used to describe the information structure, or pragmatic structure of a clause and how it coheres with other clauses, whereas the subject is a purely grammatical category. For example it is possible to have clauses where the subject is not the topic, such as in passive voice. In some languages, word order and other syntactic phenomena are determined largely by the topic–comment (theme–rheme) structure. These languages are sometimes referred to as topic-prominent languages. Chinese and Japanese are often given as examples of this.

The distinction was probably first suggested by Henri Weil in 1844. Georg von der Gabelentz distinguished **psychological subject** (roughly topic) and **psychological object** (roughly focus). In the Prague school, the dichotomy, termed **topic–focus articulation**, has been studied mainly by Vilém Mathesius, Jan Firbas, František Daneš, Petr Sgall and Eva Hajičová. They have been concerned mainly by its relation to intonation and word-order. The work of Michael Halliday in the 1960s is responsible for bringing the ideas to functional grammar.

VALENCY

Valency (or **valence**) refers to the number of arguments controlled by a verbal predicate. It is related, though not identical, to verb transitivity, which counts only object arguments of the verbal predicate. Verb valency, on the other hand, includes all arguments, including the subject of the verb. The linguistic meaning of valence derives from the definition of valency in chemistry. This scientific metaphor is due to Lucien Tesnière, who developed verb valency into a major component of his (what would later become known as) dependency grammar theory of syntax and grammar. The notion of valency first appeared as a comprehensive concept in Tesnière’s posthumously published book (1959) *Éléments de syntaxe structurale* (Elements of structural syntax).

There are several types of valency: impersonal (=avalent), intransitive (=monovalent), transitive (=divalent) and ditransitive (=trivalent):

- an impersonal verb takes no arguments, e.g. *It rains*. (Though *it* is technically the subject of the verb in English, it is only a dummy subject, that is a syntactic placeholder – it has no concrete referent. No other subject can replace *it*. In many other languages, there would be no subject at all. In Spanish, for example, *It is raining* could be expressed as simply *llueve*.)

- an intransitive verb takes one argument, e.g. *He¹ sleeps.*
- a transitive verb takes two, e.g. *He¹ kicked the ball².*
- a ditransitive verb takes three, e.g. *He¹ gave her² a flower³.*
- There are a few verbs that take four arguments. Sometimes *bet* is considered to have four arguments in English, as in the examples *I¹ bet him² five quid³ on “The Daily Arabian”⁴* and *I¹ bet you² two dollars³ it will rain⁴.*

VERB PHRASE

A **verb phrase** is a syntactic unit composed of at least one verb and the dependents of that verb – objects, complements and other modifiers, but not including the subject. Thus in the sentence *A fat man put the jewels quickly in the box*, the words *put the jewels quickly in the box* may be considered a verb phrase – this consists of the verb *put* and its dependents, but not its subject *a fat man*. A verb phrase is therefore similar to what is considered a *predicate* in some contexts.

Verb phrases may be either finite (the head of the phrase is a finite verb) or non-finite (the head of the phrase is a non-finite verb, such as an infinitive, participle or gerund). While phrase structure grammars acknowledge both types of VP, dependency grammars reject the existence of a finite VP constituent (unlike the former, they regard the subject as being among the verb’s dependents). In this regard, the understanding of verb phrases can be dependent on which theory is being considered.

Verb phrases are sometimes defined more narrowly in scope to allow for only those sentence elements that are strictly considered verbal elements to form verb phrases. According to such a definition, verb phrases consist only of main verbs, auxiliary verbs, and other infinitive or participle constructions. For example, in the following sentences only the words in bold would be considered to form the verb phrase for each sentence:

*John **has given** Mary a book.*
*They **were being eaten** alive.*
*She **kept screaming** like a maniac.*
*Thou **shalt not kill**.*

This more narrow definition is often applied in functionalist frameworks and traditional European reference grammars.

POUŽITÉ ZDROJE*

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