INTRODUCTION: THERE IS NO ALPHABET HERE

We Chinese wish to say that the privilege of a mere typewriter is not tempting enough to make us throw into waste our 4000 years of superb classics, literature and history. The typewriter was invented to suit the English language, not the English language the typewriter.

—"Judging Eastern Things from Western Point of View," 1913

As we mark the spectacular rise of the People's Republic of China, the opening ceremonies of the Olympic Games in 2008 have become a new node on our timeline. Observers of China were already familiar with the country's economic achievements over the preceding two decades, and perhaps with its advances in science, medicine, and technology. Never before had the world witnessed the full scale of China's twenty-first-century strength and self-confidence all in one sitting, however. August 8 was a theater of superlatives. The ceremony culminated the longest torch relay in Olympic history to that point (eighty-five thousand miles over 129 days), enrolled some fifteen thousand performers, and boasted a production budget of 300 million US dollars, all for the opening day pageantry alone.[1] If we include the games as a whole, and the massive infrastructural build-up in Beijing and other cities, the total budgetary outlay was somewhere in the neighborhood of 44 billion dollars.[2]

When we consider the towering cost of the spectacle—the cast, electricity bills, catering, costume design, construction crews, director Zhang

Yimou's paycheck, and more—it might seem curious to suggest that its one and perhaps only truly revolutionary moment was its least expensive and most easily overlooked. This was the Parade of Nations, the procession of national teams around the grounds of the Bird's Nest.

The first team to enter the Bird's Nest was Greece, as per Olympic tradition. Greece is the perpetual *ur*-host of the games, an event historically rooted in veneration of ancient Greek society and its esteemed place as the fount of Western democracy, science, reason, and humanism. The parade pays homage to Greece in a second, subtler way as well: the alphabetic order by which national teams enter the field of play. In his *Origins of Western Literacy*, Eric Havelock nominated Greek alphabetic script as a revolutionary invention that surpassed all prior writing systems, including the Phoenician from which it and all alphabets originate.[3] For historian, philosopher, and former president of the Modern Language Association Walter Ong, the Greek adoption and adaptation of the Phoenician alphabet was a force for democratization, as "little children could acquire the Greek alphabet when they were very young and their vocabulary limited."[4] Still others have ventured into dubious neurological claims, arguing that the invention of the Greek alphabet activated a hitherto dormant left hemisphere of the human brain and thereby inaugurated a new age of human self-actualization.[5] Greece gave us "Our Glorious Alphabet," and so every two years, we honor it in the opening ceremonies of both the summer and winter games.

The rules governing the Parade of Nations were first set down in writing in 1921 by the International Olympic Committee.[6] "Each contingent participating in the games," the regulations read, "must be preceded by a sign bearing the name of its country, to be accompanied by the national flag." Following this was a parenthetical note: "(countries proceed in alphabetical order)."[7] Such phrasing carried through to 1949, when the charter was adjusted slightly to take on the distinctly cosmopolitan form it maintains to this day. The revised regulations stipulated that it was the prerogative of the host country to organize the opening parade according to *alphabetic order as it functioned in the host country's language*.[8] With this adjustment, the IOC had taken clear steps to relativize, and thus universalize, the rules governing this international ceremony.

In the Tokyo Olympics of 1964, global television audiences might have been exposed to a non-Western and nonalphabetic script for the first time, were it not for Japan's decision to use English alphabetic order rather than kanji—the subset of the Japanese written language based upon Chinese characters—or kana—the syllabic part of Japanese writing, encompassing hiragana and katakana. Instead, it was not until the Seoul Olympics of 1988 that the world first witnessed a non-Western alphabet applied to this venerable Olympic tradition. Here in Korea, where *ga* (가) is the first syllable in Korean hangul, Greece was followed by Ghana (가나 *Gana*) and then Gabon (가봉 *Gabong*).[9]

In 2008, with the Greek national team entering the Bird's Nest—the architectural wonder designed in part by Chinese artist Ai Weiwei—the parade in Beijing was following a conventional script. Television commentators Bob Costas, Matt Lauer, Tom Brokaw, and others droned on in an unbroken stream of synthesis, as their roles demanded. They riffed on subjects as diverse as Confucianism, Tang dynasty cosmopolitanism, *taiji*, the Ming dynasty eunuch seafarer and explorer Zheng He, calligraphy, Buddhist iconography of the Dunhuang cave complex in northwest China, and the colorful diversity of China's non-Han ethnic minority peoples, among a mash-up of others.[10] The synthesis stumbled from time to time, tripping up in awkward turns of phrase (references to China's "long, *long* march" and "great *step* forward" come to mind). Endearing lapses notwithstanding, these play-by-play commentators were in rare form.

This constant hum of commentary contrasted sharply, however, with a forty-five-second span of complete exegetical breakdown that ensued when the *second* national team took the field: Guinea. Suddenly, Costas and his colleagues lost their groove.

COSTAS: Guinea follows them in. There is no alphabet here, so, y'know, if you're expecting one nation to follow the other the way they generally do at an opening ceremony, think again.

LAUER: Yeah, you're out of luck. It goes based on the number of strokes in the Chinese character [a shimmer of quiet laughter] that represents the country's name, so you could easily see a country that starts in 'A' followed by a country that starts in 'R' or vice versa. So we're gonna have the graphics at the bottom of the screen which will give you an idea ... which countries are approaching the tunnel.

Greece, Guinea, Guinea-Bissau, Turkey, Turkmenistan, Yemen, Maldives, Malta.

G, T, Y, M?

There is no alphabet here.

If Costas was at a loss for words, one can hardly blame him. 2008 was the first time in history that the Olympic Games had been hosted in a country that did *not* organize the Paradė of Nations according to alphabetic order of one sort or another—because it was the first time that the games had been held in a country whose language possessed no alphabet at all.

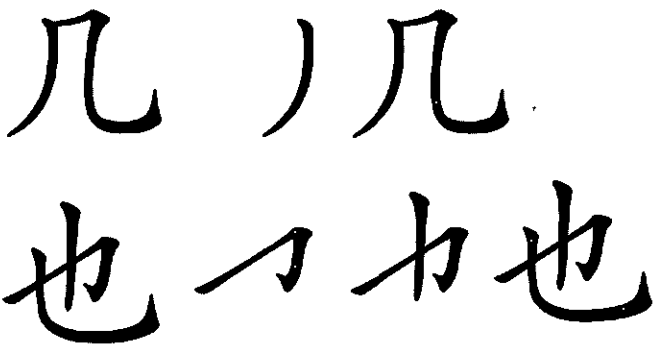
For over a century, IOC regulations had only *appeared* to the world as capacious, embracing of cultural difference, or in a word, *universal*. In 2008, the bylaws of the International Olympic Committee were unmasked as false pretenders to the throne of universalism. Predicated on the idea of choice and cultural relativism, the regulation's foundation in the idea of "alphabetical order as it functioned in the host country's language" brought the Olympic Games and their Chinese hosts to an embarrassing impasse. IOC regulations afforded China "permission" to undertake something that was, by definition, a logical impossibility: to organize the parade according to a "Chinese alphabet," which does not in fact exist.

The 2008 parade was not sequenced at random, however. There was a Chinese *dao* to match the Greek *logos*, one that functioned according to a two-part organizational system well known in China. In the first of these, Chinese characters are ordered according to the number of pen- or brushstrokes needed to compose them, an organizational scheme that had been a mainstay in China for centuries. The three-character Chinese name for *Guinea* (几内亚 *Jineiya*)—the first country to follow Greece—begins with one of the simplest characters in the written language, orthographically speaking: 几 *ji*, composed of only two strokes. By comparison, the three-character Chinese name for *Turkey* (土耳其 *Tu'erqi*), begins with the character 土 *tu*, whose composition requires three strokes in all. Consequently, Guinea preceded Turkey in the parade.

By itself, stroke count is not enough to arrive at an unambiguous order for the simple reason that many characters are composed of the same number of strokes. For example, the Chinese name for *Yemen* (也门 *Yemen*) begins with another three-stroke Chinese character, 也 *ye* (figure

I.1). Who would enter the Bird's Nest first, then: the Turkish national team or the Yemeni?

The second level of organization is based upon a centuries-old principle of Chinese calligraphy dating back at least to the Jin dynasty calligrapher Wang Xizhi (303–361). According to this principle, all characters in Chinese are composed of eight fundamental types of brushstrokes, ranked in a simple hierarchy: the *dian* (dot), *heng* (horizontal), *shu* (vertical), *pie* (left-falling diagonal), *na* (right-falling diagonal), *tiao* (rising), *zhe* (bending downward/rightward), and *gou* (*hook*) (figure I.2). When we return to the question of Turkey and Yemen, then, we find that "tu" (土)



I.1 Stroke order of *ji* and *ye*

I.2 The eight fundamental strokes of the character *yong* (eternity)

of Tu'erqi (Turkey) *is composed of the strokes horizontal/vertical/horizontal*, or 2-3-2 in terms of the ranking of each stroke; while the "ye" (也) of *Yemen* is composed of the sequence *bending downward/vertical/bending downward*, or 7-3-7. The sequence 2-3-2 outranks 7-3-7, and so Turkey entered the Bird's Nest before Yemen.

Being unfamiliar with Chinese orthographic tradition, some in the Western viewing audience resorted instead to conspiracy theory. "Did NBC Alter the Olympics' Opening Ceremony?," user *techmuse* posted on *Slashdot* on the evening of August 9, 2008, triggering a cascade of just under 500 responses over the course of 48 hours.[11] A working thesis quickly formed that the sequence of national delegations—which so clearly violated anything remotely resembling an orderly procession—must have been garbled and resequenced as part of a profit-driven decision by television executives. Anticipating that American viewers would tune out following the appearance of the US team, the conspiracy theory held, NBC had cut up the original sequence and reorganized it so as to place the US delegation toward the end of the procession, and in doing so ensured a more enduring viewing audience. "American media alters the truth to boost ratings! Movie at 11," quipped *kcbanner* just moments after the opening salvo by *techmuse*.

Notwithstanding a scattered few who attempted to highlight the obvious—that the Chinese language has no alphabet, and thus that there might be an alternate explanation—online commentary traipsed further into the abyss of speculation, as if taking Costas's admonishment to "think again" with the utmost seriousness. Some believed the theory yet pardoned it, drawing upon a kind of gritty, world-weary cynicism. "Olympic Events have always been rearranged when on a Tape delay," interjected *wooferhound*. "I expect it, and why not? It is not even displayed in correct order when it's hosted in the USA." More extreme and jocular speculations surfaced in a comment by *Minwee*, likening NBC's supposed act to "the practice started with the 1936 Berlin Olympics when the German newsreels showed only negatives of all of the track and field events, so that a white Jesse Owens could be seen beating the pants off of all the black athletes."

It was not until the second day of commentary that the fraudulence of the original theory began to receive treatment. NBC had not doctored

Table I.1
SEQUENCE OF THE 2008 OLYMPIC GAMES PARADE OF NATIONS (FIRST TEN COUNTRIES)

Order in parade	Country	Name in Chinese	Pinyin	Stroke count of first and second characters in Chinese name
1	Greece	希腊	Xīlà	7, 12
2	Guinea	几内亚	Jǐnèiyǎ	2, 4
3	Guinea-Bissau	几内亚比绍	Jǐnèiyǎ Bǐshào	2, 4
4	Turkey	土耳其	Tǔ'ěrqí	3, 6
5	Turkmenistan	土库曼斯坦	Tǔkùmànsītǎn	3, 8
6	Yemen	也门	Yěmén	3, 3
7	Maldives	马尔代夫	Mǎěrdàifū	3, 5
8	Malta	马耳他	Mǎěrtā	3, 6
9	Madagascar	马达加斯加	Mǎdájiāsījiā	3, 6
10	Malaysia	马来西亚	Mǎláixīyà	3, 7

the 2008 Parade of Nations; the sequence had simply followed a different organizational logic. What started with fury and excited speculation, then, ended limping, with one final rhetorical exclamation from *smitth1276*: "it doesn't bother any of you that this is an entirely inaccurate claim? The order wasn't changed at all, and whoever alleged that it was is smoking crack." And so the storm ended exactly two days after it began, on the evening of August 11.

Compared to the pageantry of August 8, 2008, 8:08 pm—a decadent onslaught of wireworks, fireworks, synchronized shouting, levitating LCD screens, Han Chinese toddlers donning non-Han minority outfits, an intense cardiovascular workout in the form of human-powered Chinese movable type, and child model Lin Miaoke lip synching "Ode to the Motherland" over the angelic, prerecorded voice of her more talented but apparently less aesthetically acceptable counterpart, Yang Peiyi—the nonalphabetic sequence of the Parade of Nations was more like an astute, Banksy-esque prank carefully crafted to perplex and subvert:

Greece, Guinea, Guinea-Bissau, Turkey, Turkmenistan, Yemen, Maldives, Malta.

G, T, Y, M.

There is no alphabet here.

Beijing's prank is even more delicious when we consider that China could have easily played along with IOC mythology by organizing the proceedings according to the Latin alphabet. For four decades or more, scarcely any Chinese dictionary, reference work, or indexing system on the mainland has employed the stroke-count organization used in the parade. To the contrary, in the 1950s mainland China developed and promulgated a Latin alphabet–based phoneticization system known as *Hanyu pinyin*, or pinyin for short. Designed by Chinese linguists shortly after the Communist revolution of 1949, pinyin is now ubiquitous in China, functioning as a paratextual technology that runs alongside and supports character-based Chinese writing, but does not replace it. Pinyin is not a "Chinese alphabet," thus, but China's *use* of the Latin alphabet toward a variety of ends. When Chinese toddlers first learn to read and write Chinese characters, for example, they learn pinyin at the outset in

order to assist them with the memorization of standard, nondialect pronunciation. When computer users in mainland China sit down at their laptops, moreover, the keyboard they use is of the standard QWERTY variety, but is used to produce screen output entirely in Chinese characters (more on this subject later).[12]

Beijing could have spared Costas and Lauer their embarrassment, and avoided bewildering the global viewing audience, and yet chose not to. Clearly, Chinese organizers did not *want* to spare us, and herein resides Beijing's subtle act of defiance—the one truly revolutionary moment in the 2008 ceremonies, and perhaps the only one that did not contribute to their towering budget.

CHINESE IN THE AGE OF THE ALPHABET

This is the first of two books charting out a global history of modern Chinese information technology. Divided into seven chapters, this book moves across roughly one century, from the advent of telegraphy in the 1840s to the advent of computing in the 1950s. In the forthcoming book, we will carry this history into the present age of Chinese computing and new media. Over the course of this history, we will see that the encounter between Chinese script and the International Olympic Committee in 2008 was but one of its many encounters with false alphabetic universalisms of one form or another. Whether Morse code, braille, stenography, typewriting, Linotype, Monotype, punched-card memory, text encoding, dot matrix printing, word processing, ASCII, personal computing, optical character recognition, digital typography, or a host of other examples from the past two centuries, each of these systems was developed *first* with the Latin alphabet in mind, and only later "extended" to encompass non-Latin alphabets—and perhaps nonalphabetic Chinese.

As these information technologies spread around the world, a process of globalization greatly facilitated by European colonialism and later American global dominance, they came to be viewed by many as language-agnostic, neutral, and "universal" systems—systems that worked for everyone and every tongue. In truth, however, such myths of "universality" held up only to the degree that Chinese script was effaced or erased from the story. Remington and Olivetti, as we will see, proudly declared

1

INCOMPATIBLE WITH MODERNITY

It makes the mind dizzy to think what a Chinese typewriter must be.
—*The Far Eastern Republic*, 1920

To handle a Chinese typewriter is no joke, meaning it is.
—Anthony Burgess, author of *A Clockwork Orange*, 1991

If a standard Western typewriter keyboard were expanded to take in every Chinese ideograph it would have to be about fifteen feet long and five feet wide—about the size of two Ping-Pong tables pushed together.
—Bill Bryson, 1999

The first mass-produced Chinese typewriter was a figment of popular imagination. It was first sighted in January 1900, when the *San Francisco Examiner* spread word of a strange new contraption housed in the city's Chinatown neighborhood, in the back room of a newspaper office on Dupont Street. The machine boasted a *twelve-foot keyboard* complete with 5,000 keys. "Two rooms knocked into one apartment afford shelter for this remarkable contrivance," the author explained, describing a machine so large that the "typist" was something akin to a general commanding forces over a vast terrain (figure 1.1). The piece was accompanied by a cartoon in which the caricatured inventor sat atop a stool and shouted Cantonese-esque gibberish at "four muscular key-thumpers through a

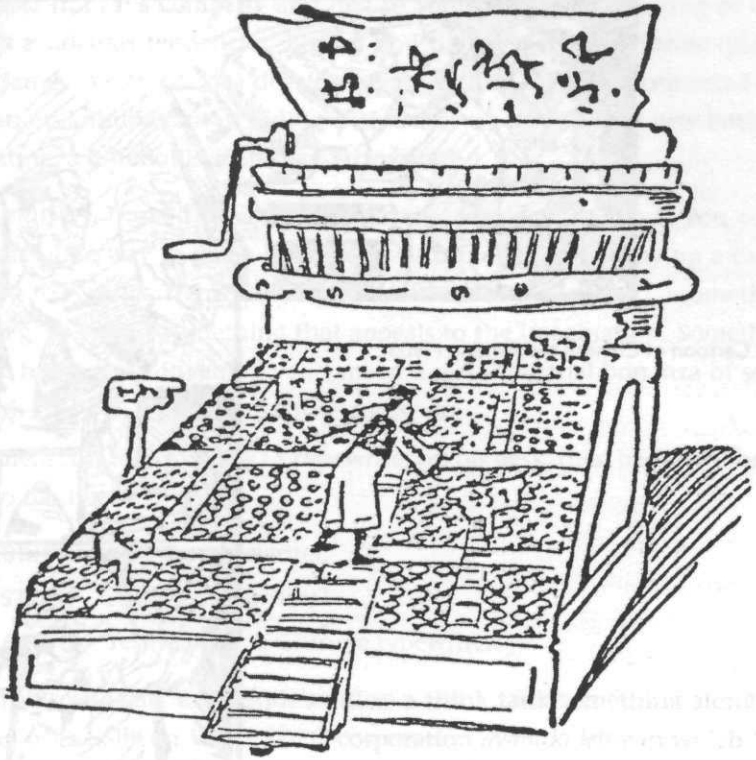
A CHINESE TYPEWRITER

1.1 Cartoon in the *San Francisco Examiner* (1900)

large tin megaphone."[1] *Lock shat hoo-la ma sho gong um hom tak ti-wak yet gee sam see baa gow!!*[2]

One year later, some 1,700 miles to the east, the *St. Louis Globe-Democrat* featured strikingly similar imagery. In form, the Chinese machine bore a resemblance to Remington typewriters growing in popularity at the time, but in size it was monumental—complete with two stairways patterned after those one might find in the Forbidden City in Beijing (figure 1.2).[3] Here, the Chinese "typist" literally climbed up and down stairways of keys, haplessly searching for his desired character.

In 1903, a name was at last given to the imaginary inventor of this apocryphal machine. Photographer and columnist Louis John Stellman christened the inventor *Tap-Key*, a deft pun that played upon faux Cantonese and onomatopoeia.[4] "I see by one of the papers that a Chinaman has invented a typewriter which writes in the Celestial language," Stellman wrote, his description augmented by a drawing of yet another absurdly large contrivance (figure 1.3). No fewer than five Chinese



A CHINESE TYPEWRITER AT WORK.

1.2 Cartoon in the *St. Louis Globe-Democrat* (1901)

operators clacked away simultaneously at this immense keyboard, while five more fed immense sheets of paper through a platen of industrial proportions. Evidently, the number of personnel needed to operate a Chinese typewriter had doubled since the machine first debuted three years earlier.

Tap-Key and his monstrous machine never existed in the flesh—only in the imagination of foreigners. In another sense, however, this imaginary machine constituted the first "mass-produced" Chinese typewriter in history, one that circulated across space and time more widely than many of the real machines we will encounter. From its first appearance in 1900, this colossal Chinese contraption would make regular cameos in

1.3 Cartoon of Chinese typewriting (1903)

popular culture, whether in print, music, film, or television, demonstrating with each appearance the technological absurdity of character-based Chinese writing. These fantasies and their discomfiting portrayals of both the Chinese language and Chinese people are not vestiges of an unsavory past, moreover, but have lived on well into the present day. One of the more peculiar appearances of this imagined object took place in 1979, in the made-for-television movie *The Chinese Typewriter*, featuring Tom Selleck as a womanizing weapons-expert-turned-private-detective.[5] The plot centered around Selleck's attempt, in the role of Tom Boston, to recapture a passenger jet stolen by one Donald Devlin (played by William Daniels), a high-powered executive discovered to have embezzled millions of

dollars from his company and fled to South America. Knowing of Devlin's avaricious tendencies, Boston and his partner Jim Kilbride (played by James Whitmore, Jr.) develop a plan to lure this well-connected and cautious criminal out of hiding with the prospect of a wild new business venture: a functioning Chinese typewriter.

KILBRIDE: Donald Devlin, his game is Money, right? So if you could figure out a way to make him richer, he'd probably shimmy up a cactus plant to get to it, right? But it would have to be something ... something so big, so exotic, something that appeals to the imagination. Something that hasn't been invented yet, I mean a real industrial bonanza of some kind. Like a ... a product for foreign export.

Camera cuts to the QWERTY typewriter on his desk, then back to Kilbride, who has begun to laugh.

KILBRIDE: Chinese typewriter.

BOSTON: Chinese typewriter?

KILBRIDE: Yes, yes. Yes, a Chinese typewriter.

The scene cuts to Kilbride's office, a think tank something along the lines of the Silicon Valley IDEO corporation *avant la lettre* in which free-range geniuses are seen tinkering on all manner of complex models, blueprints, and equations. Kilbride continues his explanation:

KILBRIDE: You see in China there's no such thing as a typewriter. They got a hundred different dialects, three thousand characters in the Chinese alphabet. So when a guy wants to type a letter he has to go to another guy, stand in front of this huge rack taking out each character one by one. It takes half a day to type a paragraph.

BOSTON: So what?

KILBRIDE: Well, so for years they've been trying to come up with a cheap computerized Chinese typewriter, one that can be sold and manufactured for 50 to 100 dollars per unit. The damn computer gotta be so large, the cheapest version they can come up with costs several thousand dollars. Too expensive to mass-produce. [Kilbride finds what he is looking for: the blueprints to a Chinese typewriter.] And these plans are useless 'cause they don't work.

Credit for the most memorable and impressive invocation of the Chinese typewriter, though, goes to Oakland-born rapper Stanley Burrell, better known by his stage name MC Hammer. In the music video to his 1990 multiplatinum hit "U Can't Touch This," Hammer debuted a bit of footwork that would go on to become one of the most well-known dances of the decade. Known as the "Chinese Typewriter"—a name that appears to have been coined not by the artist himself, but popularly and emergently—the dance featured Hammer side-stepping in rapid, frenetic movements. This step, someone apparently decided, mimicked the alien virtuosity of a Chinese typist as he navigated an absurdly massive keyboard crowded with tens of thousands of characters. Not unlike Tap-Key racing up and down stairways, Hammer's imaginary Chinese typist traversed great distances at breakneck speeds, and yet was the very embodiment of hopeless inefficiency, one whose very life force was gulped down by a lumbering behemoth that produced hardly anything in return.

If Hammer and Selleck have invoked the imagined Chinese typewriter in the arena of popular culture, still others have brought it into the arena of popular and academic scholarship. In 1999, celebrated writer Bill Bryson assured readers of his popular study of the English language that "Chinese typewriters are enormous, and most trained typists cannot manage more than about ten words a minute."[6] Drawing upon a vibrant imagination, an alphabet-centered understanding of information processing, and a total lack of familiarity with the technology of which he spoke, Bryson invoked the image of a hulking piece of equipment measuring some seventy-five square feet—"two Ping-Pong tables pushed together"—on which even a trained operator could not help but limp along at a comically slow pace. Walter Ong agreed. "There can be no doubt," he emphasized in his landmark *Orality and Literacy*, "that the characters will be replaced by the Roman alphabet as soon as all the people in the People's Republic of China master the same Chinese language ('dialect'), the Mandarin now being taught everywhere." "The loss to literature will be enormous," Ong continued, "but not so enormous as a Chinese typewriter using over 40,000 characters."[7]

Returning to Tap-Key and his monstrous machine, we are immediately struck by the dehumanizing and exoticizing caricatures. What concerns us primarily here, however, is not the charged racism of this imagery,

but another aspect that easily escapes notice. In each of these many portrayals of the mythological Chinese machine, one invariably encounters massive *keyboards* with thousands upon thousands of *keys*. The question we will ask in this chapter is, quite simply: Why *keys*? Why did Stellman call his fictional protagonist *Tap-Key*? Why, when Bill Bryson imagined a Chinese typewriter, did his mind turn to a fifteen-by-five-foot *keyboard*? Why is it that, for us in the present day, as for those in 1900, simply to hear the words "Chinese typewriter" brings to mind a monstrous Rube Goldberg contraption featuring an immense keyboard upon which each of the language's tens of thousands of characters is assigned its own dedicated key? If it "makes the mind dizzy to think what a Chinese typewriter must be," where does our mental dizziness come from exactly?

A tempting reaction to this question would be to invoke "common sense": typewriters are, by definition, machines with keys and keyboards, making it perfectly natural that our minds should turn to such metaphors when imagining a Chinese "version" of this device. We could take this logic further, in fact, and contemplate all of the many subtle properties that we associate with the typewriter, often without realizing it. Visualizing a mechanical English-language machine in our minds, we might depress the key marked "A" and watch as the machine impresses the corresponding letter on the page, in lowercase. Automatically, the carriage advances one space, horizontally and to the left. If we depress the key marked "L," the carriage advances again, exactly the same distance, despite the difference in width of the letters "l" and "a." Our hands and fingers, poised above the keyboard, are also worthy of note. The very form of the machine enforces a visceral distinction between the different "strengths" of the digits of the hand: the pinky is *weak*, and the forefinger *strong*. We press the carriage return, the platen rotates a set distance, and the machine sails back across your line of sight, once again horizontally, but this time to the right. Such is the "essence" of the typewriter.

However commonsensical all of these qualities might sound to us now, none of them were predestined to become part of our taken-for-granted understanding. Were we to conduct the same thought experiment circa 1880, at a time when typewriting was a novel arena of practice still very much in formation, many more images would have come to mind—most of which have since left our collective memory. In the early

years of American and European typewriting, as we will see, there were many different *types* of typewriters that did not necessarily contain the features we now consider part of the typewriter's inherent essence. Some machines were designed to be operated using only one hand, as with the Malling-Hansen Writing Ball, designed by Danish inventor Rasmus Malling-Hansen (1835–1890) and famously owned by Friedrich Nietzsche during the 1880s to compose letters during a time of rapidly declining health. Others arrayed the letters of the alphabet around a swiveling circular plate, as in the Lambert typewriter of 1904. Still others had *no keys or keyboards at all*, as with the American Visible Typewriter of 1891. Indeed, only one form of typewriter embodied all of the features we now consider the sine qua non of typewriting.[8] This was the keyboard-based, single-shift machine. The Remington, the Underwood, the Olivetti.

Returning to Tap-Key and the imaginary Chinese typewriter, then, this chapter mounts a counterintuitive argument: when we view denigrating cartoons of monstrous Chinese machines, or seemingly neutral statements about Chinese technolinguistic "inefficiency," we are in fact staring at the death mask of our own once vibrant technolinguistic imagination—the collapse of a once rich ecology of both machines and *ways of thinking about machines* that has since disappeared into the monoculture of the Remington world. In the wake of this collapse, and in the context of the Remington monoculture, it has become increasingly difficult to imagine anything *other* than keys and keyboards—and thus to imagine anything *but* monstrous Chinese absurdities equipped with thousands of keys. The Chinese monster in our minds is not a static image, that is to say—a photograph in an album that we retrieve and contemplate from time to time. It is the outcome of a kind of mental program that is occasionally jolted from dormancy and allowed to run its course. The program runs as follows:

A typewriter is an object with keys.
Each of these keys corresponds to one letter in the alphabet.
Chinese possesses no alphabet, but rather entities called "characters."
There are tens of thousands of characters in Chinese.
A Chinese typewriter must be an enormous device with many thousands of keys.

Every time it is initiated, this conceptual algorithm guides its thinker to the same invariant conclusion, all while producing the belief that he or she has arrived at this conclusion spontaneously and autonomously. The immensity of the Chinese typewriter is not something that must be ruminated upon. Rather, it feels true because it simply *insists*. It is this conceptual algorithm, and not the Chinese language, that is a cause of our dizziness.

The "Chinese typewriter" as monstrous Other was, in this way, the byproduct of a collapsing technolinguistic imagination in twentieth-century America and Western Europe. It derived from popular notions of Chinese exoticness and alterity, to be sure, but much more importantly from emergent and often unconscious beliefs about what constituted the "normal" relationship between language and machines in the alphabetic world. To understand our imagined Chinese typewriter, then, we must pay *less* attention to the "Chinese" part of this dyad, I argue, and far more to early Western conceptions of the "typewriter" itself—for it was through machines like the typewriter that many in the Euro-American world came to form deep-seated opinions about their own languages, as well as non-Western, non-Latin, and especially nonalphabetic scripts. We must dig deep into the history by which "keyboards" and "keys" became inseparable from our understanding of "typewriter."

Once we understand where this idea of the Chinese typewriter-as-monstrosity comes from, we are in a position to appreciate the potent ideological work it has performed over the course of its long career. Stipulating that Louis Stellman, Bill Bryson, Tom Selleck, and MC Hammer are not high on the list of individuals we often turn to for insight into the history of China, or the global history of modern information technology, nevertheless I argue that there is profound analytical value in understanding the process by which diverse groups of individuals can, when presented with the words "Chinese typewriter," consistently arrive at more or less the same monstrous and absurd outcome. This mental algorithm is a site of acute importance, for it is within this algorithm that we find insight into a central question of our larger story: the historical process by which longstanding nineteenth-century critiques of Chinese writing managed to survive the decline of those evolutionist and social Darwinist arguments on which they had, for more than a century, been

based. The image of the absurd Chinese keyboard is thus neither frivolous nor innocuous. It is the successor to a discourse that in the previous century had been rooted squarely in notions of racial hierarchy and evolutionism. More than successor, in fact, this technological monster rehabilitated and rejuvenated Orientalist discourses, insofar as calls for the abolition of Chinese characters in the twentieth century and beyond have no longer needed to traffic in gauche, bloodstained references to Western cultural superiority or the evolutionary unfitness of Chinese script. Now the same arguments could be made more forcefully through the sanitized, neutral, and supposedly objective language of comparative *technological fitness*. After all, if a Chinese typewriter is really the size of two Ping-Pong tables put together, need anything more be said about the deficiencies of the Chinese language?

Before we move on to examine real Chinese information technologies beginning in the next chapter, then, it is vital for us to examine the history of the illusory ones, for in this history there emerged a pervasive and powerful interpretive framework from which real Chinese information technologies—real Chinese typewriters, in particular—never escaped over the course of their own histories. This history of our collapsing technolinguistic imaginary took place across four phases: an initial period of plurality and fluidity in the West in the late 1800s, in which there existed a diverse assortment of machines through which engineers, inventors, and everyday individuals could imagine the very technology of typewriting, as well as its potential expansion to non-English and non-Latin writing systems; second, a period of collapsing possibility around the turn of the century in which a specific typewriter form—the shift-keyboard typewriter—achieved unparalleled dominance, erasing prior alternatives first from the market and then from the imagination; next, a period of rapid globalization from the 1900s onward in which the technolinguistic monoculture of shift-keyboard typewriting achieved global proportions, becoming the technological benchmark against which was measured the "efficiency" and thus modernity of an ever-increasing number of world scripts; and, finally, the machine's encounter with the one world script that remained frustratingly outside its otherwise universal embrace: Chinese. Across this history, we will see how the rise of Remington in particular transformed the material, conceptual, and financial departure points

for all subsequent thinking about typewriting for the world's languages. When Remington conquered the world, it was not "the typewriter" in any abstract sense that made its way into practically every corner of the globe—it was specifically the single-shift keyboard that achieved global saturation. This particular *type* of typewriter became the machine against which every writing system in the world would be measured, with profound implications for every one of them it absorbed—even more so for the one writing system it could not.

ASIA BEFORE REMINGTON

Our history of Tap-Key and the imaginary Chinese typewriter begins, not in China nor in the United States, but in Siam. Here, in the year 1892, the first Siamese typewriter was invented by Edwin Hunter McFarland, second of four children of Samuel Gamble and Jane Hays McFarland.[9] Before their children's birth, the McFarlands had put down roots in Siam and established the family as missionaries, doctors, educators, and philanthropists with access to the highest rungs of elite society.[10] Edwin graduated from Washington and Jefferson College in 1884, and returned to Siam to serve as the private secretary of Prince Damrong Rajanubhab, son to Mongkut King Rama IV, and half-brother of Chulalongkorn King Rama V.[11] In 1891, Prince Damrong dispatched Edwin to the United States with a very particular charge: to develop a typewriter for the Siamese script, just one of the court's many reform and modernization initiatives.[12]

Edwin enjoyed considerable resources in accomplishing this task. He had trained with his father in the art of printing, and could draw upon his father's work on the first printed dictionary of the Siamese language.[13] Even more importantly, Edwin had at his disposal a much wider array of approaches to the question of typewriting than would be true only a few decades later. At a time before Western typewriters had settled into the form we now take for granted, Edwin had before him different types of typewriters to choose from, each offering a different starting point from which to engage with this exotic, non-Latin script.

As he contemplated the written Siamese language, with its forty-four consonants, thirty-two vowels, five tones, ten numerals, and eight punctuation marks, Edwin would have encountered three typewriter paradigms,

each presenting different affordances and limitations. One option was the index typewriter, a form of typewriter that did not have keys or a keyboard, but instead employed a flat or circular plate upon which the letters of the alphabet were etched. Using a pointer, the typist operated the machine by moving the pointer to the desired character, and then depressing a type mechanism.[14] The earliest known index machines were the Hughes Typewriter for the Blind (1850), the Circular Index (c. 1860, maker unknown), and the Hall Typewriter, developed in 1881 by the American inventor and entrepreneur Thomas Hall. One of the advantageous features of index machines was the interchangeability of types, fonts, and thus languages—a feature that inventors and entrepreneurs celebrated and promoted to potential customers. Like his contemporaries, Hall had global ambitions for his invention, setting out to internationalize the machine practically as soon as the first model was released in Salem, Massachusetts. As early as 1886, Hall began to promote his interchangeable typewriter plates for Armenian, Dutch, French, German, Greek, Italian, Norwegian, Portuguese, Russian, Spanish, and Swedish.

For Edwin's purposes, Hall's machine had its limitations, however. Like other American typewriter inventors, Hall thought almost exclusively in terms of Western European writing systems—whether Latin, Greek, or Cyrillic—formatting each of his interchangeable metal plates with the same eight-by-nine matrix format. With a total of seventy-two possible symbols, Hall's machine served such languages as Italian and Russian quite well, but fell just short of the number required for Siamese.[15]

A second option was the single-shift keyboard typewriter, exemplified in the manufactures of the Remington Typewriter Company. Founded by Eliphalet Remington in 1816, the company began life as a Civil War–era weapons manufacturer based in Ilion, New York. As the cataclysmic war came to an end, and as the United States entered the postbellum period, Remington set out to reallocate its efforts, collaborating with the typewriter companies Yost and Densmore, and the inventors Christopher Sholes, Carlos Glidden, and Samuel Lewis. In 1873, Remington debuted the Sholes and Glidden Type-Writer. This single-keyboard system featured an interface upon which each key corresponded to both the lower- and uppercase versions of each letter. The operator could toggle between cases using the now familiar "shift" key.

The limitations of the Remington device would also have been apparent to Edwin, however. In English, there is a sharp distinction in terms of frequency between lowercase and uppercase letters, one that made it eminently reasonable to sequester uppercase letters to the harder-to-reach "shift" level. In English, capital letters constitute between 2 and 5 percent of all printed matter, with lowercase letters accounting for most of the balance. Out of the 2,641,527 letters that constitute Jane Austen's *Pride and Prejudice*, for example, only 14,177 or 2.56 percent are capital letters. Melville's *Moby-Dick* exhibits only a slightly higher percentage of 2.91 percent. *Ulysses* by James Joyce and Shakespeare's *Hamlet* fall toward the outer bound of capitalization, ranking at 4.58 percent and 5.61 percent, respectively.[16] By offloading these little-used uppercase letters to secondary "shift" keys, typewriters could be reduced in size, without affecting ease of use or output.

The same could not be said of Siamese, whose alphabet does not distinguish between lower- and uppercase forms. As such the "shift" function of the single-keyboard machine would have required Edwin to relegate half of the Siamese alphabet to the more cumbersome, two-stroke operation. This was certainly possible, but far from opportune.

A third option, and the one that Edwin ultimately chose, was the double-keyboard machine designed by the Smith Premier Typewriter Company. Alexander T. Brown, an inventor from Cortland, New York, had founded the company in 1880 when, like his counterparts at Remington, he teamed up with the weapons manufacturer Lyman C. Smith. In a machine shop in Syracuse, they worked on the typewriter, and eventually made it a primary focus of their business. Indeed, thanks to the immense plant they constructed at 700 East Water Street, Syracuse came to be known by many as "Typewriter City." The company's flagship model at the time was the Number 4, with which Smith Premier established itself as the leader in double-keyboard or "complete keyboard" machines, as the manufacturers themselves referred to their design.[17] With 84 keys on the keyboard, the double-keyboard machine "provides a key for every character," the company's advertisements boasted, enabling greater accuracy than its shift-keyboard counterpart, saving time for the operator, and prolonging the life of the apparatus (insofar as there was no "shift" key that would shoulder the burden of heavy usage, and wear down or break

1.4 The Smith Premier double-keyboard typewriter

in the process). "In a shift-key machine," the Smith Premier company explained, "there is danger of error, the operator taking the hand out of its natural field to depress the shift-key."[18]

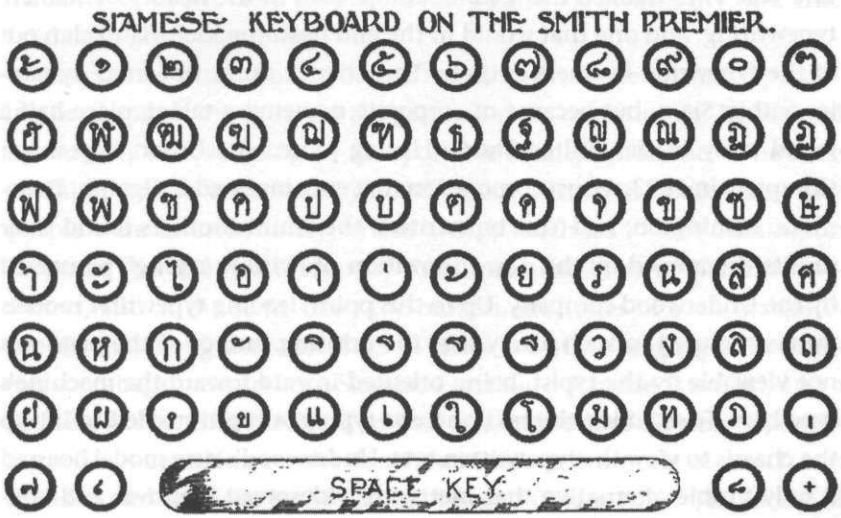
When it came time for Edwin to finalize a manufacturing agreement, it was in Syracuse, and not at the factories of Hall or Remington, that he found the best fit for the needs of Siam's modernization efforts (figure 1.4). Siam was to be Smith Premier country.

Having chosen his technolinguistic starting point, Edwin now needed to work with engineers to revisit some of the integral design principles of the machine to bring it into compliance with the specifications of

Siamese writing. One of the primary requirements was to retrofit the machine with a greater number of so-called "dead keys," a technical term referring to keys that do not advance the platen after an impression is made. Equipped with such dead keys, Edwin's retrofitted Smith Premier would thus be capable of handling Siamese accents, first registering an accent and then superimposing the letter.[19] Having built up the letter, the carriage then advanced to type the next one.

The Siamese script would need to change as well, alerting us to the fact that this technolinguistic negotiation was by no means a lossless one. Even with its ample 84 keys, Edwin's brother George later recalled, the Smith Premier machine "lacked two of the number needful to write the complete Siamese alphabet. Do what [Edwin] would, he could not get the whole alphabet and tone marks on the machine [figure 1.5]. So he did a very bold thing; he scrapped two letters of the Siamese alphabet." "To this day," he continued, "they are absolutely obsolete."[20]

In 1895, loss befell the Siamese royal family and the McFarland clan alike. The designated successor to the Siamese throne, Crown Prince Maha Vajirunhis, died of typhoid, whereupon Maha Vajiravudh acceded as the eldest son of King Rama V.[21] In the same year, Edwin died an early



1.5 Keyboard of Siamese typewriter

death as well, exacting an emotional toll on the family, and leaving to his younger brother George the McFarland Siamese Typewriter. "From 1895, the typewriter became a part of the fabric of my life," George recalled. "On Ed's death it devolved on me to introduce the use of the Siamese typewriter. He had made it but it was not yet appreciated and wanted."

George McFarland was not an inventor. He was a dentist. Deeply embedded in Siamese society like others in his family, he managed the Siriraj Hospital of Siam and established the first private dentistry office in Bangkok circa 1891.[22] Here in his office, George placed his late brother's typewriter on display for his patients as a kind of deeply personal museum exhibit. Perhaps inspired by the curiosity it generated, or by the memory of Edwin, George soon took a much bolder step two years later: he opened a Smith Premier store of his own in Bangkok, thereby continuing the unlikely sisterhood between Syracuse and the Siamese capital.[23] "During the next few years," George recalled, "thousands of these machines were imported and the day came when no Government office felt it could do business without a Smith Premier."[24]

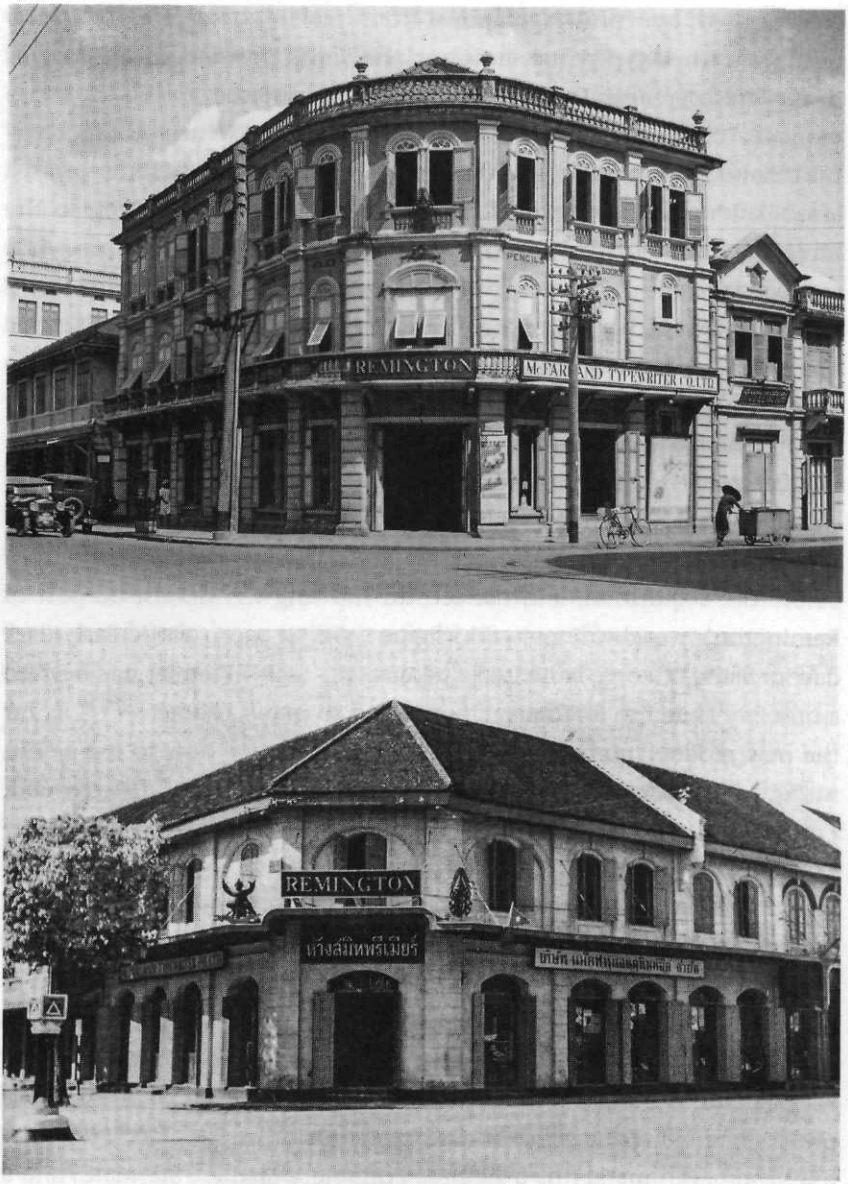
OUR COLLAPSING TECHNOLINGUISTIC IMAGINATION

The year 1915 marked the second, abrupt turn in the history of Siamese typewriting, and one that would in the end push the McFarland clan out of the typewriter business entirely. This change came, not from dynamics within Siam, but because of corporate maneuvers taking place half a world away in the United States. Having joined the Union Typewriter Company in 1893, a trust corporation that encompassed Caligraph, Densmore, Remington, and Yost typewriters, the Smith Brothers found their profits threatened by the new innovation of "visible typing" pioneered by the Underwood company. Up to this point, leading typewriter models were structured in such a way that the printing surface of the page was not viewable by the typist, being oriented inward toward the machine's type bars. To examine the text one was typing, a typist needed to lift up the chassis to view the typewritten text. Underwood's new model boasted a fully visible alternative that met with widespread approval and consumer demand.

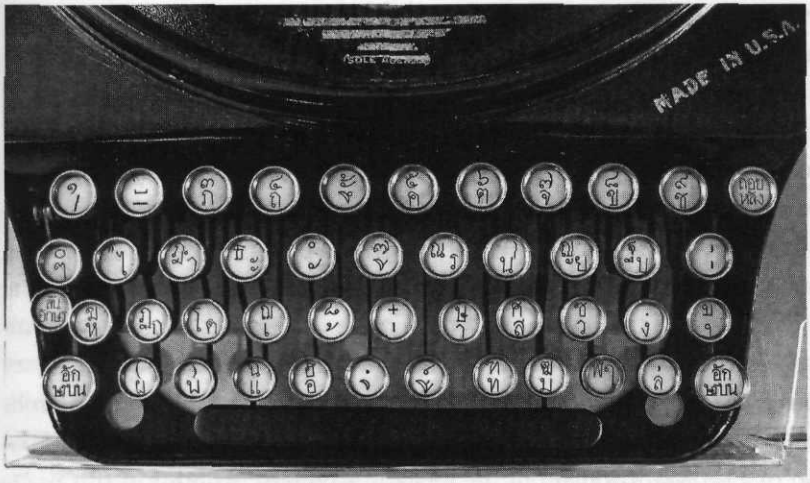
Prevented by trust regulations from making sweeping structural changes to their typewriter, however, the Smith brothers sold all shares in the Smith Premier Typewriter Company, departed from the trust, and reorganized as L. C. Smith & Brothers Typewriters Inc. Their first model—the "Standard"—incorporated visible typing design, and in the process also abandoned their original double-keyboard format, moving to the increasingly dominant single-keyboard, shift-key typewriter form. As a consequence, the global supply of double-keyboard machines dried up—a shift that mattered perhaps little in the English-language market, but one that took out of circulation the device that formed the basis of Siamese typewriting to that point.

This change was cemented in 1915, when Remington purchased Smith Premier. As George recalled, it was "decreed that no more non-shift typewriters were to be manufactured."[25] This transition was captured in a pair of photographs from the period, the first showing George's storefront before the acquisition, and the second showing the newest outpost of Remington's worldwide network (figure 1.6). "It was a particularly dark day for Siam," George lamented, "because the Smith Premier had been so admirably suited to a language possessing so many characters."[26] As for the new model, "no one wanted it"—"no one knew how to use a shift machine: everyone cried for the old No. 4's and 5's. I was at my wits' end. I did not know what to do."[27]

George had little choice but to convert to the cause of shift typewriting or abandon the business altogether. While on furlough, he assisted Remington in developing its first portable Siamese machine. "The little machine was so attractive and convenient," he later confessed, "that people were induced to try to use a shift machine."[28] The Remington keyboard was adopted eventually by all manufacturers of Siamese typewriters, and at the same time, the models and styles of such machines proliferated along the same lines as those for other languages. Remington soon began marketing a Siamese Portable, a Siamese Standard, and a Siamese Accounting Machine, as well as a network of Siamese typewriting schools centering on the Touch Method—at least one of which was founded and overseen by McFarland himself (figure 1.7).[29] The future of Siamese typewriting belonged to the typewriter form made famous by Remington.



1.6 The old McFarland store and its Remington Company replacement



1.7 Siamese typewriter by Remington, manufactured c. 1925 (USA), Peter Mitterhofer Schreibmaschinenmuseum/Museo delle Macchine da Scrivere, Partschins (Parcines), Italy

With the transition to a single-keyboard design, elements of Siamese writing once considered compatible with the technology of typewriting were suddenly flagged as "problems." The "characters are so numerous," remarked Abel Joseph Constant Cousin (1890–1974), inventor and French priest who worked with Remington's competitor, the Underwood corporation, to develop a new model of Siamese machine.[30] This was true not only for Siamese, he felt, but more broadly for "foreign languages of the Asiatic groups." The "problem was left unsolved," Cousin claimed in his patent application, "of adapting the Siamese language to a standard typewriter keyboard, which has only 42 keys." What was required was to "reconcile the discrepancy which exists in the requirements for 94 characters to be typed upon a 42-key-machine, since the latter is capable of operating only two characters for each key, or 84 characters in all." Certain limitations would need to be observed, however. "The cost of making a small number of enlarged machines sufficient to supply the market," he explained, "each having many extra types and keys, would be prohibitive, as it would involve practical redesigning of the machine thoroughly and would make it necessary to incur prohibitive outlay for newly designed manufacturing dies, patterns and equipment." Only by further

pruning the Siamese script would it be possible to "bring the typing of Siamese substantially on par with that of modern European languages."

This passage by Cousin is revealing for three reasons. First, we see in real time how Siamese script became a "problem," and how this problem took shape as part of the relationship between Siamese orthography and the shifting grounds of technolinguistic imagination in the world of typewriting. Second, we notice the peculiar way Cousin went about assigning blame for this new "problem." Namely, for Cousin it was not that the Underwood was incompatible with Siamese, but Siamese that was incompatible with the Underwood. Finally, we notice the broader category Cousin deployed in making his claim about Siamese: the Siamese problem was not restricted to Siamese, in fact, but was instead an instantiation of a broader problem of the "Asiatic"—where "Asiatic" in this usage was effectively synonymous with scripts that exhibited an abundance of orthographic modules exceeding the capacity of his machine.

When George McFarland published his memoir in 1938, much had changed.[31] A small batch of photographs bear witness to this transformation, scarcely larger than postage stamps, printed in vivid black and white, and now housed at the Bancroft Library in Berkeley as part of McFarland's papers. Two young girls appear in the photographs, kneeling upon the ground and holding up a sign. The sign reads *Remington,* and flanking it are two other young girls, this pair wearing neckties, holding a winged Remington typewriter ensconced by a wreath, the machine posed as if flying through the air (figure 1.8).

1.8 Remington Siamese typewriter event photos

The wider scene behind the girls encompasses more than twenty-five school-age children, all encircling this homage to the typewriter, in the background standing the equestrian statue of King Rama V and the Ananta Samakhom Throne Hall.[32]

Siam was now part of the Remington empire.

"REMINGTON AROUND THE WORLD"

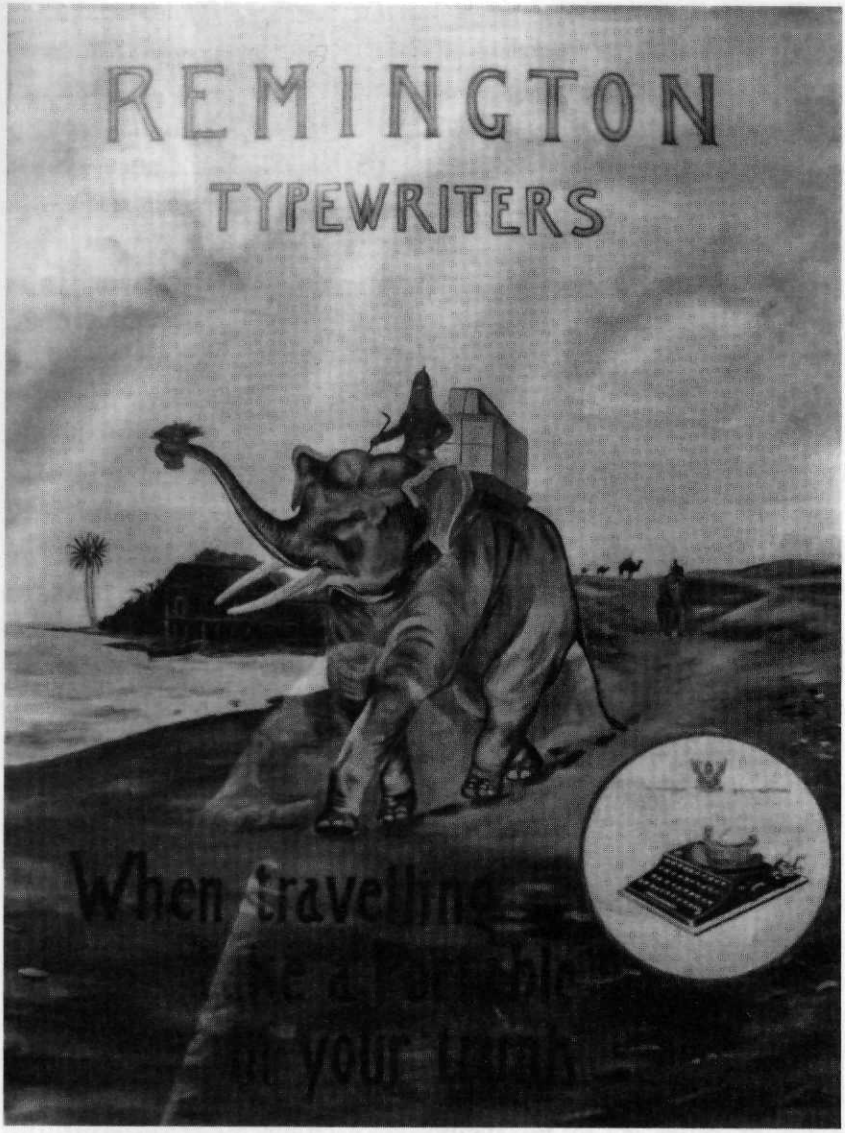
Remington's acquisition of the McFarland shop on the corner of Burapha and Charoen Krung roads was but one part of a much larger global effort, decades in the making. Remington first presented its new product to the world in 1876 at the Centennial Exposition, although with little fanfare; it was outshone there by Alexander Graham Bell's telephone, which captured worldwide attention. It was not until the 1880s and early 1890s that the company measurably increased its reach into markets both at home and overseas. In 1881, the company sold no more than 1,200 machines in all. In 1882, however, the sales agency Wyckoff, Seamans, and Benedict took over as the company's sales agency, bringing the device to markets worldwide.[33] Direct sales representatives were soon stationed in Germany in 1883, France in 1884, Russia in 1885, the United Kingdom in 1886, Belgium in 1888, Italy in 1889, Holland in 1890, Denmark in 1893, and Greece in 1896. As early as 1897, the company boasted of branches in Paris, Bordeaux, Marseilles, Lille, Lyons, Nantes, Antwerp, Brussels, Lisbon, Oporto, Madrid, Barcelona, Amsterdam, Rotterdam, and The Hague, among other European cities; and representatives throughout the Americas, Asia, Africa, and the Middle East (in locations including Algiers, Tunis, Oran, Alexandria, Cairo, Cape Town, Durban, East London, Johannesburg, Beirut, Bombay, Calcutta, Madras, Simla, Colombo, Singapore, Rangoon, Manila, Osaka, Hong Kong, Canton, Fuzhou, Macao, Hankou, Tianjin, Beijing, Jiaozhou, Saigon, and Haiphong).[34]

In 1897, Remington also began to herald its Number 7 model as the company's omnilingual flagship, encompassing "every language which uses the Roman characters" as well as Russian, Greek, Armenian, Arabic, and "a complete line of polyglot keyboards."[35] Ten years later, in 1907, the company would release its first front-strike, visible typewriting machine, the Number 10, and in 1915 it was selected as the Official Typewriter

for the Panama-Pacific International Exposition in San Francisco (which would feature an illustrious Remington Pavilion, and for which all typed official communications were to use Remington machines).[36]

Part and parcel of Remington's ascendancy was the decline and disappearance of those alternate typewriter forms that Edwin McFarland had contemplated not long ago. The diverse ecology of approaches that had once characterized early typewriting steadily thinned out, replaced by a technolinguistic monoculture populated exclusively by varieties of the single-shift design. Double-keyboard machines like those from Edwin and George's past disappeared entirely from the market, while non-keyboard index machines all but vanished.[37] As McFarland's generation gave way to the next, moreover, new cohorts of inventors chose almost without exception to use the single-shift machine as their mechanical starting point when contemplating the design of foreign-language machines. The single-shift keyboard typewriter became a magnetic core, attracting ever-increasing numbers of patent applications, with Remington and other companies becoming the hubs of global sales, marketing, and distribution networks.

The globalization of typewriters was a source of immense pride and prestige for these companies. "When travelling, take a portable in your trunk," one pithy Remington ad read, portraying a caravan of elephant-riding Arab traders tracing a path across an unnamed desert, transporting a small rope-bound load of unmarked wooden crates (figure 1.9).[38] "Not everybody knows that there is an organized government in Mongolia," a *Wall Street Journal* article read in 1930, "but Remington Rand has filled an order for 500 Remington Typewriters for that government."[39] From its headquarters in Ivrea, the Italian manufacturing firm Olivetti (founded in 1908) shared in this broader discourse of global typewriting. In the pages of *Rivista Olivetti*, readers learned of the company's penetration of markets in Vietnam, Cambodia, and Laos. As the company's report explained, these societies remained charmingly ancient, and yet had also "adapted to modern life." "It is not without pride," the story remarked, "that Olivetti contributes to their forward march with its supply of typewriters."[40] Olivetti lauded its creation of an Arabic typewriter as well, assigning to it a practically civilization-shifting impact upon the Arab world. "Yes, for Arabs too have their typewriter," one *Rivista* article read,



1.9 Remington around the world: an advertisement for Remington typewriters

1.10 Advertisement for Olivetti Arabic typewriter

as if in dialogue with an incredulous reader, "and they owe it to the typewriter, which is now daily used by them, if they have been able to free themselves from the last practical difference which they still had with regard to the Europeans" (figure 1.10).[41]

The globalization of this technology, coupled with the rise of a technological monoculture, exerted a profound effect on the cultural imaginary of script, technology, and modernity. A typewriter in Cairo would now look, feel, and sound *exactly* the same as one in Bangkok, New York, or Calcutta—all except for the symbols on each machine's keyboard. This unified, *rat-a-tat* cadence of the single-shift typewriter—soon referred to simply as *the typewriter*—would become part of the soundtrack of a new global modernity.

The apotheosis of the single-shift machine is best appreciated viscerally by perusing the holdings of some of the world's most extensive typewriter museums and private collections. Whether at the Peter Mitterhofer

Schreibmaschinenmuseum in Partschins, the Musée de la Machine à Écrire in Lausanne, or the Museo della Macchina da Scrivere in Milan, one must practically press his face up to the glass to discern the languages of the machines on display. Hebrew, Russian, Hindi, Japanese kana, Siamese, Javanese, and more are all practically indistinguishable, feeding into a peculiar effect in which language itself seems to be merely a *feature* or *amenity* of the machine.[42] What emerges is the effect of an omnilingual, omnicompetent, reified *ur*-typewriter that "comes in" Burmese, Korean, Arabic, Georgian, or Cherokee, the same way that its high-gloss exterior might "come in" black, gray, red, or green.

To achieve this effect was no small feat, it bears noting. Indeed, the globalization of the single-shift keyboard required nothing short of engineering brilliance. Even as *Remington News* and *Notizie Olivetti* blurred the lines between typewriters for Arabic, Hebrew, Russian, French, and Italian, presenting them as identical in every way except for their keyboards, engineers knew better that keyboards alone did not an Arabic, Hebrew, or Russian typewriter make. Keys and keyboards were but the most visible—one might reasonably say *superficial*—manifestations of a highly technical process of translating the materiality of the English-language machine into forms that could handle other languages and scripts. It was only inside the machine, amid its orchestra of subcomponents, that a typewriter could be said to "have" or "be" language—carriage advance mechanisms, spacing mechanisms, the selective use of dead keys. In fact, for engineers and manufacturers, it was not even in the devices themselves that language lived, but in the casts, dies, molds, presses, lathes, and assembly processes of the factory. More than the Remington typewriter, it was the Remington typewriter *factory* that constituted English. To translate the English-language Remington machine into Arabic, Khmer, Russian, or Hebrew was, in actuality, to translate the Remington factory itself.

Just like Edwin McFarland, inventors who set their sights globally confronted different challenges and complexities along the way. Each "problem," and indeed each trivial adjustment and nonissue, was party to a dialectic between their target script and their technolinguistic starting point, emerging not from any fundamental properties of either the writing system or the machine, but out of the tensions and fortuitous compatibilities that emerged between them.

In the era of Remington, scripts were measured not against the "English language" or the "Latin alphabet" in any abstract sense, but against the concrete, technolinguistic configurations of the single-shift keyboard machine as it had been built for the English language: a limited set of keys, limited capacities of character superimposition, with an equidistant, leftward-advancing carriage. All of these qualities, which perhaps seemed "invisible" and "natural" within the context of English typewriting, became either useful or obstructive properties that had to be reimagined and redesigned, one by one.

Engagements with exotic writing systems were not simple binaries, then, pitting Self against Other, or alphabetic against nonalphabetic. They involved a complex spectrum along which each of the alphabetic and syllabic scripts of the world were ranked on a scale of greater and lesser compatibility with the modern. At one end was the taken-for-grantedness of the English language, neighbored by those scripts that required of the English typewriter little more than cosmetic adjustments to the keyboard and the key surfaces. In the cases of French, Spanish, and Italian, for example, the fortuitous overlap of alphabets demanded at most a new layout of letters on the keyboard, so as to approximate better their relative frequency in different languages. Russian required only a somewhat more complicated transformation, in this case by outfitting the machine with the Cyrillic alphabet, which numbered a mere 33 letters.

At the other end of the spectrum, however, were arrayed those scripts whose technolinguistic performance demanded much more challenging engagements. The plasticity and universality of the typewriter form was tested to a far greater extent by Hebrew and Arabic, for example. These scripts demanded all of the more facile changes considered thus far—new letter frequency analyses, font-creation, the resurfacing of the keyboard—but also more complex shape-shifting. In Hebrew, the operative difference that concerned engineers was not the difference of alphabet, but the right-to-left directionality of the script. In a machinic sense, Hebrew was English *backward*, with engineers concentrating their attention upon what they saw as the salient part of the English-language machine in need of modification: the carriage-advancing mechanism. In 1909, Samuel A. Harrison filed a patent for an "Oriental Type-writer," which would be based upon the American-built Yost machine. Harrison's patent focused

exclusively on adjusting the Yost typewriter such that "by a certain adjustment the same operating device will cause the relative advancement ... to be reversed whereby the feed of the member that is advanced is in the opposite direction."[43] "By this means," Harrison explained, "the typebar or type-carrying mechanism can carry two or more different alphabets, one of which such as the English is printed from left to right on the paper" while for the other "the printing will read in the reverse direction from right to left; as for instance the Hebrew language."[44] In 1913, London-based inventor Richard A. Spurgin accomplished the same, this time as assignor to the Hammond Typewriter company. Beginning with the Hammond machine, he focused his efforts on creating a "reversible carriage" for "Hebrew and those languages that require the operation of the machine in a manner reverse to that of our language."[45]

In creating these slightly revised machines, Western designers and manufacturers reopened certain "black boxes" within the structure and behavior of the English-language device—in this case, the otherwise taken-for-granted mechanism of leftward carriage advance. The typewriter form here had to grow, as it were, to encompass its mirror image, wherein the depression of keys triggered a rightward rather than leftward movement, and the "return" key initiated the opposite. In the legal realm, this required the filing of new patents and the drafting of appropriately worded explanations of the mechanism. In the realm of manufacturing, it required the adjustment of dies and molds, those negative spaces that would be used to manufacture the new Hebrew "version" of the typewriter form. Through the course of these adjustments, however, engineers had to take great care. The starting "typewriter-self" could be stretched and twisted, certainly, but engineers had to take pains not to stretch or twist it so far as to "cut" or "tear" it—that is, to violate the starting condition in some fundamental way. The basic substance of the normative, English-language typewriter had to remain consistent: Hebrew could not require a full-scale reimagination of the typewriter, only a varied type of performance.

Fortuitously for engineers, the solution to the Hebrew problem brought them halfway through the Arabic problem as well, Arabic being a script also written from right to left. The Arabic problem required still another adjustment of the typewriter form, however, this one to address

the cursive ligatures that govern the flow of Arabic letters. Although typewriter engineers were pleased by the relative "economy" of Arabic letters, in terms of overall number, many Arabic letters are inscribed in one of four different ways, depending upon their relative positions within a word. Letters can appear at the beginning of a word (initials), betwixt letters (medials), at the close of a word (finals), or by themselves (isolated), challenging engineers to "fit" each of these graphemic variants on a device incapable of handling them all.

In 1899, a self-identified artist from Cairo, Selim Haddad, patented one of the earliest designs for an Arabic typewriter.[46] Arabic possessed only twenty-nine letters, he explained in the patent, but their different shapes and connections had "swelled the number of characters or type to the enormous number of six hundred and thirty-eight."[47] Haddad proposed an ingenious solution: for each Arabic letter, he would use only two variants, rather than four, one variant to handle all initials and medials, and the other to handle all finals and isolates. Constructing "my new letters without a connection-bar solely on their right sides," he explained, "and constructing the middle and beginning letters with a connection-bar on their left I have derived advantages of great importance."[48] "It allows me to use one and the same shape of the letter for both beginning and middle positions and one and the same shape for both the end and isolated positions."[49] With this innovation, he explained, he would reduce the overall number of variant forms from over six hundred to a mere fifty-eight—well within the compass of the single-keyboard apparatus.[50]

Inventors did not always agree on the best way to transmute the single-keyboard typewriter form to achieve such technolinguistic performances. The problem of Arabic orthographic variation was later revisited by Baron Paul Tcherkassov of St. Petersburg, Russia, and Robert Erwin Hill of Chicago.[51] Calling their machine a "Universal Eastern alphabet typewriter," oriented toward what they collectively described as scripts "such as the Arabic, Turkish, Persian, and Hindustani," Tcherkassov and Hill contended that the "Arabic problem" was to be resolved using a group of specially crafted, semantically meaningless graphemes that could be combined with real Arabic letters to produce all necessary ligatures. Simply put, their Arabic typewriter would produce certain letters using conventional, single-key acts of inscription, while others would need to be

"built up" using multiple keystrokes (some being real Arabic letters, and others being meaningless "connectors").[52]

No matter the disagreements, however, typewriter inventors in the twentieth century all subscribed to one powerful orthodoxy: never should the encounter with exotic scripts throw the single-keyboard typewriter form itself into question in any fundamental regard. "It is highly desirable in building a special machine of this sort," one inventor noted, capturing this orthodoxy succinctly, "that as much of the machine as possible may be of the ordinary standard form and of such a character that the special machines can run as far as possible through the ordinary course of manufacture for which the factory is organized and for which the tools are adapted."[53] Such motivations are readily understandable when we return to the discussion above regarding the factory as the site of language. Companies like Remington, Underwood, Olivetti, Olympia, and others had built factory floors fine-tuned to the stamping and assembly of metal parts, compositing them into precision devices to be shipped all over the world as part of a lucrative market. While a powerful economic motivation was to produce as many different types of foreign-language machines as possible, nevertheless the mantra of the period was, quite reasonably, that of *minimal modification*.[54]

By the midpoint of the century, the single-shift keyboard had conquered practically the entire world, with traces of its own historical particularity all but erased. Encounters with Siamese, Hebrew, and Arabic may have challenged the typewriter form, demanding it to stretch beyond its English-language and even Latin alphabetic origins, and prompting engineers to reopen such "black boxes" as leftward carriage advance, dead keys, and more, and yet never did such modulations threaten the machine's core mechanical principles. The fundamental blueprints of the starting point remained identical in every instance, as did the machine's underlying processes of casting and assembly. The single-keyboard machine had not only conquered the global typewriter market. It would seem to have conquered script itself.

The globalization of the single-shift keyboard typewriter had profound effects on the writing systems it absorbed into its expanding family. The most profound impact was reserved, however, for the one world script that it failed to absorb: Chinese.

TAP-KEY AND THE CHINESE MONSTER

Chinese characters eluded Remington, conspicuously and frustratingly absent from the company's growing roster. Although thousands of Western-style keyboard machines were indeed sold on the Chinese market, this was exclusively in support of the expatriate and Western colonial offices in China's treaty ports and missionary outposts. Although typewriter companies made widespread claims about the universality of their machines—that their machines could handle all languages—such claims quietly excluded a vast subset of the human population. The typewriter's "universality" was anything but.

When we reflect on the approach of engineers and inventors, the reasons for this absence are not difficult to surmise. If Hebrew had challenged engineers to make their machines bidirectional, vertical Chinese writing challenged them to imagine a machine that moved along a different axis altogether. If keyboard designers strained in their statistical analyses of Siamese, Russian, Arabic, and Hebrew, Chinese confronted them with an entirely nonalphabetic script. Albeit unintentionally, Chinese writing served as vigilant witness to the pseudo-universalism of the typewriter form, this false pretender to transcendence. That Chinese played this role, it bears reminding, was by no means preordained. Had no solution presented itself for the "Arabic typewriter problem" or the "Siamese typewriter problem," one or more of these scripts might have stood beyond the outer bounds of the typewriter's plastic embrace. One or more of these scripts might themselves have achieved the status, not simply of "an other," but as "the Other": alterity so radical that the Western typewriter form could not become it, except through a metamorphosis so intense as to annihilate this typewriter-self in the process. A solution was found for each of these puzzles, however, sometimes elegantly and at other times awkwardly: Hebrew became English "backward," Arabic became English "in cursive," Russian became English "with different letters," Siamese became English "with too many letters," French became English "with accents," and so forth. While different in many ways, Arabic, Hebrew, and Siamese were, in some fundamental sense, commensurable with the typewriter—and therefore, commensurable with the technolinguistic modernity it represented.

For predictable financial reasons, typewriter developers and manufacturers never entertained the notion of abandoning their pseudo-universal typewriter form in the face of a recalcitrant Chinese script. What ensued was precisely the opposite. They dispensed with all of the romantic notions of civilizational possibility that characterized their engagements with other languages. They abandoned their seemingly boundless willingness to interrogate and reimagine many of the typewriter form's most taken-for-granted features. Instead, they marshaled all of the material and symbolic resources at their disposal to set out on what would become an unrelenting, multifront character assassination of the Chinese script itself—a kind of technolinguistic Chinese exclusion act. From this moment forward, it would be the Chinese script, and not any limitations of the single-keyboard typewriter form, that would bear the full weight of responsibility for the "impossibility" of Chinese typewriting—if Chinese was technolinguistically "poor," the script alone was responsible for its poverty. Phrased differently, the single-keyboard typewriter form would finally realize its universality by excommunicating from this universe one of the world's oldest and most widely used writing systems. In the Kristevan sense, the Chinese script was marked as the "abject form": an object or condition existentially intolerable to a given system or state of affairs, and as such one that had to be banished from ontology itself.

Here, then, we return to Tap-Key and the comical monstrosity of the imagined Chinese typewriter to explore the second question raised at the outset of this chapter: What ideological work is being performed by images and ideas such as these? What does it mean that the Chinese typewriter has been derided and denigrated by the strange bedfellows of MC Hammer, Walter Ong, Bill Bryson, *The Simpsons*, Qian Xuantong, Anthony Burgess, Tom Selleck, the *Far Eastern Republic*, the *St. Louis Globe-Democrat*, the *San Francisco Examiner*, the *Chicago Daily Tribune*, Louis John Stellman, and countless others?

To answer this question, we must momentarily return to a time before the typewriter, when critiques of Chinese writing were not grounded in terms of technology so much as those of race, cognition, and evolution. In *The Philosophy of History*, Georg Wilhelm Friedrich Hegel posited that the very nature of Chinese writing "is at the outset a great hindrance to the development of the sciences."[55] Arguing that the very structure

of Chinese grammar rendered certain habits and dispositions of modern thought unavailable—ineffable and perhaps even unimaginable—he found that those who thought and spoke in Chinese were inhibited by the very language they used from ever taking the stage of progressive History with a capital H. All human societies were by language possessed, in other words, yet Chinese people had the misfortune of being possessed by one that was incompatible with modern thought.

Within the larger history of the anti-Chinese discourse, Hegel's role was one of transmitter and popularizer but not innovator. As many scholars have argued, the nineteenth century witnessed the formation of a powerful strain of social Darwinist thought which, like its parent theory, organized the totality of human language into a hierarchy of progress and backwardness.[56] The organizing principle, again reflecting its epistemic heritage, valorized the Indo-European language family, and deemed as developmentally retarded those languages that lacked such properties as declension, conjugation, and, above all, alphabetic script. As linguist, missionary, and sinologist Samuel Wells Williams (1812–1884) observed, "Chinese, Mexican, and Egyptian were alike morphographic; sometimes called ideographic." Among these, "Mexican" was barbarously destroyed by Western invaders, and Egyptian ultimately yielded to phoneticization. China alone tenaciously held on to this dying system of writing, "upheld by its literature; strengthened by its isolation; and honored by its people and their neighbors who had no written language."[57] What ensued was a "mental isolation caused by the language": "it has attached them to their literature, developed their conceit, given them self reliance, induced contempt of other nations, hindered their progress."[58] Such languages were understood as being stuck in a state of arrested development that, in turn, froze in time those who spoke and thought in, with, and through these languages.

Chinese was long a preferred target of social Darwinism. Comparativists dwelled on its "ideographic" script, tones, and lack of conjugation, declension, gender, and plurality. Chinese was, for many, the quintessential antipode, a conviction so powerful that even apologies for the Chinese language could be drafted into the service of its critique. In 1838, Peter S. Du Ponceau (1760–1844) mounted a painstaking argument in which he refuted the long-held idea of Chinese as an ideographic

language, demonstrating that the majority of characters were in fact composed of both categorical and phonetic components.[59] Faced with this seemingly destabilizing proposition, one that might have closed the space of alterity between Chinese and non-Chinese languages, reviewers of Du Ponceau's work seized upon this idea of semi-phoneticization to recast the language as an evolutionary half-breed—a written language on its way to, but which never arrived at, full alphabetization. Du Ponceau, one review read, "has successfully combated the old and general opinion, that the Chinese system of writing is ideographic; showing that the characters do not represent ideas but words, which recall ideas."[60] At the same time, the reviewer continued, Du Ponceau had also demonstrated that the Chinese were linguistically inferior to even "the savage tribes of the New World." The latter, "though destitute of all literature and even of written language," the review continued, "are found to be in possession of highly complex and artificial forms of speech ... while in the Old World, the ingenious Chinese, who were civilized and had a national literature even before the glorious days of Greece and Rome, have for four thousand years had an extremely simple, not to say rude and inartificial language, that, according to the common theories, seems to be the infancy of human speech."[61] The lowest of the New World, it would seem, surpassed the highest of the Old.

Fetishization of the alphabet operated as a powerful trope within many disciplines, tending to show up wherever Western scholars engaged in the comparison of linguistic scripts and ruminated on the relative strengths and weaknesses thereof. In 1853, Henry Noel Humphrey wrote in his *The Origin and Progress of the Art of Writing* that the Chinese "never carried the art of writing to its legitimate development in the creation of a perfect phonetic alphabet."[62] "The Chinese language," a 1912 tract reported, "is the most horrible that any sane man can be called upon to acquire."[63] "The Chinese language must go."[64] "Phonetic characters in-the-making, like the Chinese," W.A. Mason echoed in his 1920 tract *The History of the Art of Writing*, "long since arrested in the development of its written characters at an early stage."[65] "Away with the old ideography," Bernhard Karlgren proclaimed cavalierly in his classic 1926 study *Philology and Ancient China*, "and replace it with phonetic writing."[66] A

1932 report phrased it even more bluntly: "The writing of Chinese in the Chinese manner is, as a proposition, simply 'too bad.'"[67]

Over the course of the twentieth century, however, voices both inside and outside the social sciences began to question the social Darwinist program, and with it, notions of Chinese as evolutionarily "unfit." In 1936, American sinologist Herrlee Glessner Creel (1905–1994) published "On the Nature of Chinese Ideography," an essay in which he mounted a painstaking critique of the widely shared belief that Chinese script constituted an orthographic half-breed caught between the presumed origins of all written language—pictography—and their presumed destiny of full phoneticization. Creel mounted a critique not only of anti-Chinese discourse but also of the West's broader preoccupation with cenemic script. "We Occidentals have come, by long habitude," he argued, "to think that any method of writing which consists merely of graphic representations of thought, but which is not primarily a system for the graphic notation of sounds, in some way falls short of what writing was foreordained to be, is not indeed writing in the full sense of the word."[68] Creel took aim directly at authors who believed in the supremacy of the alphabet, and the related idea that the grammar of Chinese rendered certain forms of thought—particularly those forms deemed critical to modernity—ineffable.

Creel's argument hinged upon a pivotal critique being leveled at the time against broader notions of comparative civilization and race science—a critique exemplified in the work of Franz Boas (1858–1942). While the impact of Boas's work could be felt in other disciplines, Creel explained, it was to be lamented that no parallel shift had yet taken place in writings on nonalphabetic languages such as Chinese. "In philosophy, in the study of society, in biology, we have at last abandoned the theory of unilinear evolution," Creel explained. He continued:

> We no longer suppose that we can range all living creatures in a single line, from the protozoan to man. We recognize that phenomena are various and intractable, not fitting easily into our preconceived schemes. We have learned that theories must be cut to fit the facts, not facts to fit the theories. But in this matter of writing the old idea lingers on. If Chinese does not fit into the predetermined top of the scale, then it follows that Chinese is primitive.[69]

Culminating Creel's argument was a profound and deceptively simple pronouncement: "It is as natural for the Chinese to write ideographically as it is for us to write phonetically."[70]

Over time, evolutionist arguments against Chinese have fallen steadily into dubious standing. In his 1985 work *Writing Systems*, Geoffrey Sampson dedicated an extended meditation to refuting the notion of Chinese insufficiency.[71] Meanwhile, those who had once lent authority to such arguments began to backpedal. Referring to his and others' work in the influential volume *Literacy in Traditional Societies*, Jack Goody later stated that "We certainly gave greater weight than we should to the 'uniqueness of the West' in terms of communication, a failing in which we were not alone."[72] Goody began to tread more cautiously around the question of Chinese, and retreated from earlier claims of Western exceptionalism. "The logographic script inhibited the development of a democratic literate culture," Goody added, in line with his earlier claims, but "it did not prevent the use of writing for achieving remarkable ends in the spheres of science, learning and literature."[73] Goody steadily distanced himself from one-time fellow travelers, and from overreaching and Eurocentric scholarship that confidently presented the alphabet as the catalytic agent of the "Greek Miracle."[74] Although Eric Havelock saw fit to posit that "the Chinese script is a historical irrelevance," and although Robert Logan blamed Chinese script for the absence of a Chinese scientific revolution, Goody now went so far as to hint at the possibility of Chinese *advantages* and Western *disadvantages*.[75] "With a vastly reduced number of components," Goody wrote in 2000, "it becomes initially more difficult, but in the end easier to learn. Logographs, such as Chinese characters, can be learned one by one. Everyone, even without schooling and language learning, can be partially literate. In Japan, I have only to recognize the sign, not the word, for *entrance* or *men*, to be able to use the parking lot or the toilet; I do not have to understand a whole system, as with the alphabet."[76] "Of these there are some 8,000 in current use, although basic Chinese for popular literature needs a range of only 1000–1500 characters," Goody continued. "In these respects it is the most conservative of contemporary writing systems."[77]

Concepts of alphabetic supremacy and Chinese linguistic unfitness were not so easily dispelled, and yet those who continue to champion

such views have found themselves increasingly marginalized. In the late 1970s and early 1980s, linguist and psychologist Alfred Bloom briefly took up the torch of the Chinese-as-nonmodern camp. The lack of a subjunctive mood in the Chinese language, he argued in the course of a 1979 article, rendered it impossible for Chinese thinkers to conceive counterfactually, thereby limiting their capacity to conceive of or generate the sort of hypothetical propositions that were so vital to the development of science and innovation.[78] This same view also informed the work of sinologist Derk Bodde who, in describing a China he saw as "linguistically handicapped," argued that "written Chinese has, in a variety of ways, hindered more than it has helped the development of scientific ways of thinking in China."[79] Inheriting and elaborating upon the long heritage of Chinese antimodernity, William Hannas has more recently attempted to resurrect many of the same arguments, contending that Chinese, Japanese, and Korean orthography "curbs creativity" and helps explain Asia's inability to compete in the world of technology and innovation.[80]

As William Boltz calmly noted, however, in reference to the work of Bloom, and by extension all those who mount arguments couched in ideas of cognitive limitation: "No serious linguist who knows Chinese has had any difficulty refuting it." Consonant with Creel's "principle of effability," Boltz underscored a claim that was fast becoming accepted fact—that "languages in their capacity to express human thought are all equal, at least in the sense that every language has the capacity or potential to express what its speakers want to express."[81]

With the decline of race science and the rise of cultural relativism, the story of the twentieth century would seem to be one of steadily growing cross-cultural engagement and understanding. Notions of Chinese linguistic "unfitness" have largely disappeared, or at the very least have become decidedly quieter and less self-certain. Those who carry the torch of previous generations have come to seem archaically Eurocentric and gauche—if not the dross of airport bookshop paperbacks, unworthy of serious intellectual engagement.

In reality, however, the concept of Chinese linguistic unfitness not only survived the decline of evolutionism and race science, but flourished in the new century. This rejuvenation and fortification owed its second life to technology, wherein questions of Chinese linguistic fitness

henceforth moved out of the politically untenable realm of race, and into the sanitized realm of technological devices like the typewriter. Principal among the denigrators were technologists themselves. "From Ancient to Olivetti," the Lettera 22 campaign of the early 1950s read, this slogan displayed prominently above a pair of contrasting images: the Olivetti typewriter, which stood as the emblem of sleek and functional modernity, and a potpourri of Chinese characters of the kind found on oracle bones from the Shang dynasty (1600–1046 BCE)—used as the token placeholders for antiquity (figure 1.11).

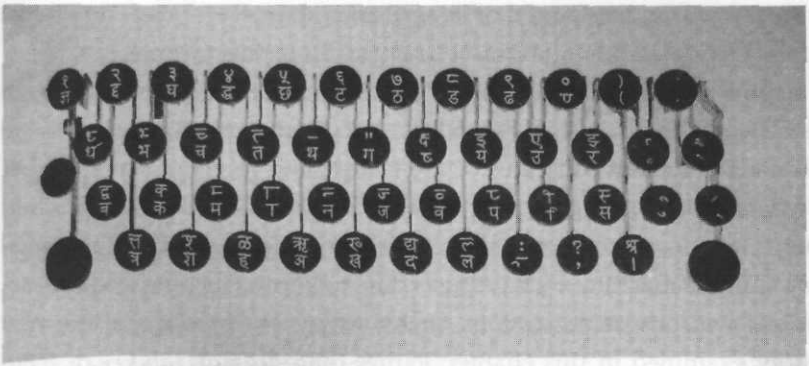
By the second half of the twentieth century, there existed a global echo chamber in which tropes of Chinese technolinguistic absurdity and irrelevance resonated and repeated, unchecked and uncritically. In 1958 Olivetti proclaimed that their machines "write in all languages" (figure 1.12).[82] Like Remington and Underwood, Olivetti could enjoy such a statement only to the extent that the company barred from view the script that stood frustratingly outside its embrace: Chinese.

Meanwhile, the rest of the world's love affair with the keyboard typewriter grew ever more passionate. The typewriter was an inscription machine, first and foremost, but far beyond that, it had become a thick symbolic ecology made up of imagery, aesthetics, iconography, and nostalgia. In service to the cult of authorship, the typewriter became a legitimating mark of the artist. Any writer of repute (real or imagined) had to be photographed at some point before his or her favorite model, immortalized in the smoky act of creation. By mid-century, the cult of the typewriter was so strong that Allen Ginsberg, in the famous closing passage of *Howl*, could even use this inscription device to announce the sacredness of the device itself. In more ways than Ginsberg himself may have realized, the typewriter was indeed *Holy!*[83]

Meanwhile, more than any other symbol, the "Chinese typewriter" as imagined object became the single most widespread and damning piece of evidence in the rejuvenated trial against Chinese characters—one in which Chinese script was again found to be incompatible with modernity and deserving of abolition. What at first ran parallel to, and helped to illustrate its more dominant evolutionist counterpart, soon inherited the throne as the only acceptable mode by which concepts of Chinese unfitness could be deployed. By conjuring up farcical and absurdist images

1.11 Advertisement for Olivetti Lettera 22

of monstrous Chinese typewriters, the criticism of Chinese inoculated itself against claims of unsavory evolutionism, and recast itself in the sanitized and supposedly objective language of *technological fitness*. While it became déclassé for one to concur with Bodde, Havelock, Bloom, and others on evolutionist grounds, or with their more distant Hegelian antecedents, the ongoing trial against the modernity of the Chinese language was renewed in the twentieth century with redoubled vigor in the seemingly neutral realm of *technolinguistics*. Perhaps Chinese speakers were able to express themselves as completely as those of Western languages in a cognitive sense, and so Hegel was wrong. Yet *technologically*, speakers and writers of Chinese were demonstrably hindered by their onerous script, one that obstructed literacy and the adoption of modern information technologies such as telegraphy, typewriting, stenography, punched-card computing, and more—and so Hegel was *right*. This modern technological critique of Chinese—one framed in the clean, plastic-and-metal world of carriage advance and platens, rather than blood-temperature terms such as cognition, culture, race, social Darwinism, and evolutionism—would



Le macchine Olivetti scrivono in tutte le lingue

Le nostre fabbriche producono per tutti i mercati macchine per scrivere con 170 diverse tastiere

« Illustre A;ico. Le ;andia;o un elenco di L wone... ». La perfetta dattilografa, la campionessa delle 500 battute al minuto alle gare di dattilografia, la segretaria modello che scrive — secondo i rigidi canoni dei libri didattici — senza degnare di uno sguardo la tastiera ed il foglio di scrittura, facendo due errori di battuta *su trenta lettere quotidiane, rimane esterrefatta davanti* a tale ignominia, da lei commessa. « Che mai succede? Capogiro? Reazione del subconscio? ».

Si tranquillizzi, signorina, lei sta benissimo. Non stia a disturbare Freud. Suo unico difetto è stato quello di non controllare, prima di iniziare la lettera, che la macchina su cui scrive fosse veramente la sua, quella che adopera *abitualmente. Qualcuno, infatti, forse per* scherzo, ha sostituito la sua macchina, con tastiera italiana, con una inglese, che ha alcuni tasti disposti differentemente. Le battute erano precise, e se fossero *state* eseguite sulla solita macchina la frase sarebbe risultata esatta: « Illustre Amico, le mandiamo un elenco di 5 zone... ».

Questo episodio, probabilmente non accaduto, ma che potrebbe benissimo succedere, serve ad introdurci nelle non semplici vicende delle tastiere delle macchine per scrivere, assillante preoccupazione di inventori e costruttori.

Già l'avvocato Giuseppe Ravizza di Novara, sfortunato predecessore dei fabbricanti di macchine per scrivere *(i suoi « cembali scrivani », realizzati artigianal*mente dal 1855 al 1881, erano strumenti rudimentali che anticipavano i principi base delle moderne macchine per scrivere), intuì che il problema della tastiera rappresentava un elemento di primaria importanza nella sua invenzione.

« Decisamente — egli annotava — il maneggio del " *cembalo scrivano* " *è ben diverso da quello del* pianoforte. In questo la mano scorre e salta continuamente ed ha bisogno di un certo agio, nel mio la mano deve stare ferma o quasi raccolta, e le sole dita lavorare, quindi in questo gesto la mano deve stare ed in lunghezza ed in larghezza quanto più si può concentrata e ristretta ed i tasti avere quella sola larghezza che comporta la dimensione delle dita e non più ».

1

1.12 Olivetti article from 1958

in the last will and testament of its aged and estranged forebear deftly and quietly be named the inheritor of its entire discursive fortune.

Having now prepared ourselves to meet real Chinese typewriters—to view them with our own eyes, and listen to them with our own ears—we will need to remain conscious of the fact that, at all times, the interpretive frameworks through which we grasp and understand such sights and sounds will never stop being shaped by and refracted through the imaginary Chinese machine we have just come to know. Our eyes and ears are not our own private possessions, that is to say, but products of the very history examined in this chapter. Rather than disdain *Tap-Key* or feign liberation from him and his descendants—efforts that would not only be disingenuous but also unproductive—our posture should instead be one of uncomfortable embrace. The typewriter form globalized by Remington, Underwood, Olivetti, Olympia, and others is not an object with which we have a "relationship," in the sense that it sits at a distance from us, separated by Cartesian emptiness. The typewriter form that emerged during the twentieth century, and which spilled out into a broader iconography, is an object we think *with* and *through*, not an object we think *about*. By accident of history, our consciousness at this particular moment in time *is* Remington.

We travel now to Ningbo, in southeast China, but to a time prior to the emergence of the typewriter. As we will see, the "puzzle" of Chinese typewriting—that is, of fitting a nonalphabetic script containing thousands of characters within a novel information technology—is one that first emerged in the 1800s among foreigners who contemplated the relationship between the Chinese language and two earlier technolinguistic systems: movable type and telegraphy. It was here in the 1800s, before the advent of the typewriter, that the puzzle of Chinese typewriting first began to take shape.