African Languages: Assessing the text input difficulty

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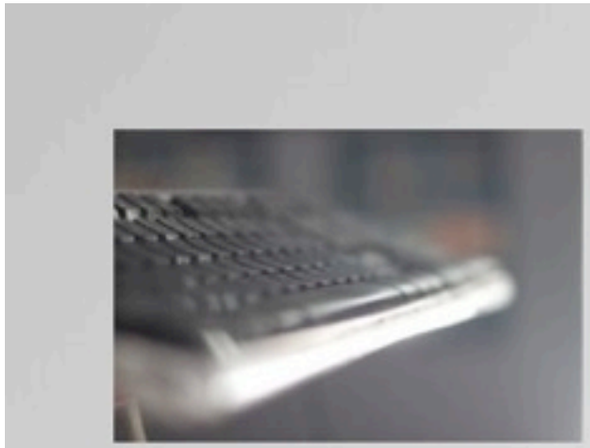
Text input

Basically I mean typing!

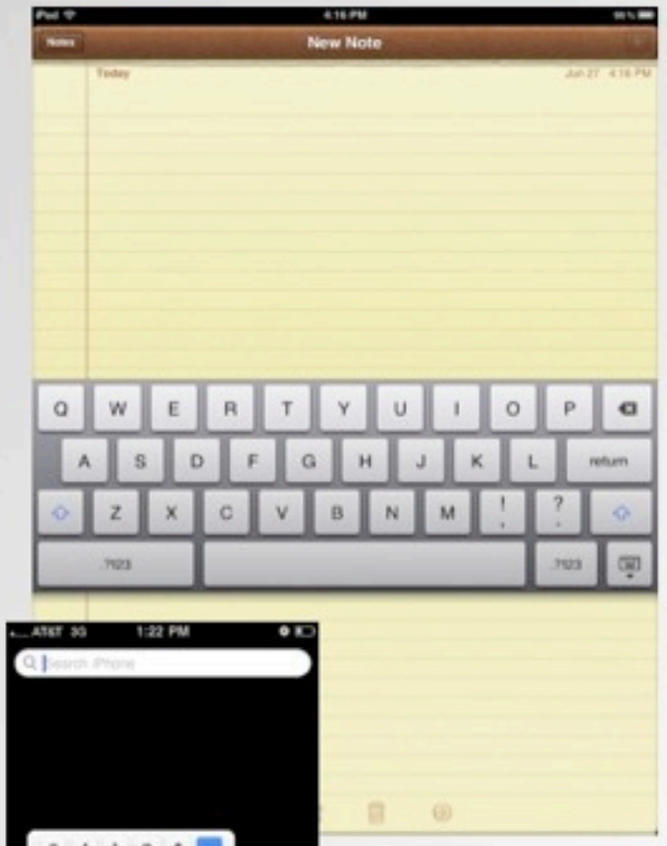
- Is not orthography
- Is complex
- Happens in a variety of *environments* - various combinations of *devices* and *sociolinguistic and socio-technological settings*.

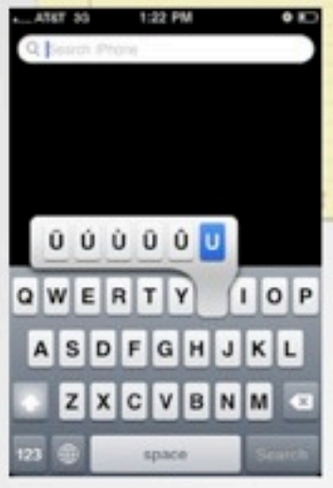
Typing happens in different places

With different tools.

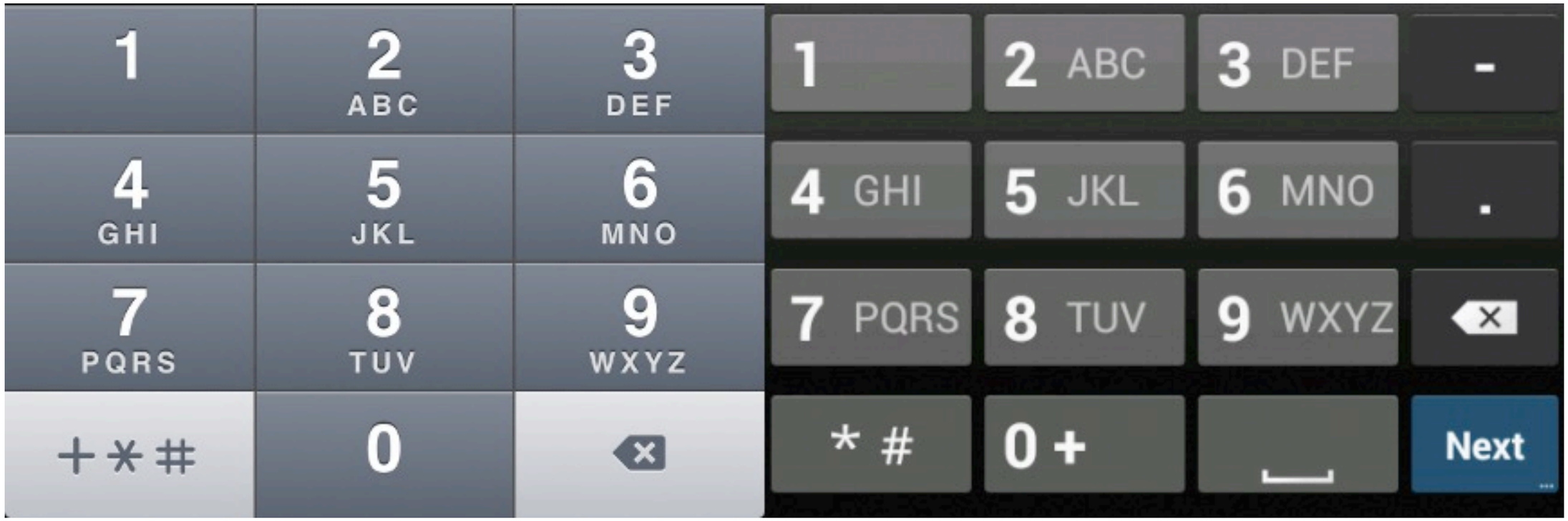


Multi Finger Keyboard





Single Character Key



Single Finger Keyboard

Multi Character Keyboard

Text input

- And then we want the text to look like different things...

Sample Ezaa Text

Ẹkwo-ozhi-a bẹ shi l'ẹka mbẹdua, bụ Jémusu bụ onye ozhi Chileke, bụru onye ozhi Onye-Nwe-Ọha bụ Jisọsu Kuráyisutu. Ndu mu l'ede iya anụ bụ ikfu iri l'ẹbo ono, bụ ndu nke Kuráyisutu, dzuru mgboko. Ekele mu unu-o. Ụnwunna mu, nteke iwhe adata byakfutaru unu; g'ọ dụlee, unu wojeru iya l'ọo iwhe ẹswa byarụ unu. Unu makwarụ-a l'ọo nteke l'aadata unu nke ekwekwe, unu kweru bẹ unu l'e-shi nwụta ọtaru iwhe nshi. 4 Unu talẹkwawho nshi tafụ iya l'ishi nggẹ unu dụkota ree, dzukwaawho oke; t'ọ bọ dụ iwhe l'a-whọdu l'ẹhu unu.

[Ẹkwo-Ozhi, JÉMUSU Deru 1: 1-4]

Sample Bekwarra Text

Ami Ijems ng'm sha okulo ka Atabuchi ahe n'Ukaani iten Ijisos Kraist, m kang n'amin woo b'e yi eni Atabuchi b'e ka paa ye mia iye angin woo. Ebwiyaa, k'unyang ng'iyem atitye-atitye a shi n'amin ng'i kan achi-anaani inen na ngin, amin è chi r'irinen k'irityem, k'ucheche dee amin e nyie dee, k'unyang ng'iyem abin a tyung dee achi-anaani inen i yi ang'áchìchī nga, i sha irityem inen k'i bya ha. Amin è ye k'úchú bi irityem he, k'amin è chi r'iyem woo ab'e sha uni k'i giri, k'amin è waa abo chaa iyem achaani fo re.

[Ileta Ang'ijems a Fuo1:2-4]

So our fingers dance different dances

Ezaa
Sample Text

So our fingers dance different dances

Full Text

Ezaa
Sample Text

But dancing is work... right?

Bekwarra
Sample Text

But dancing is work... right?

Full Text

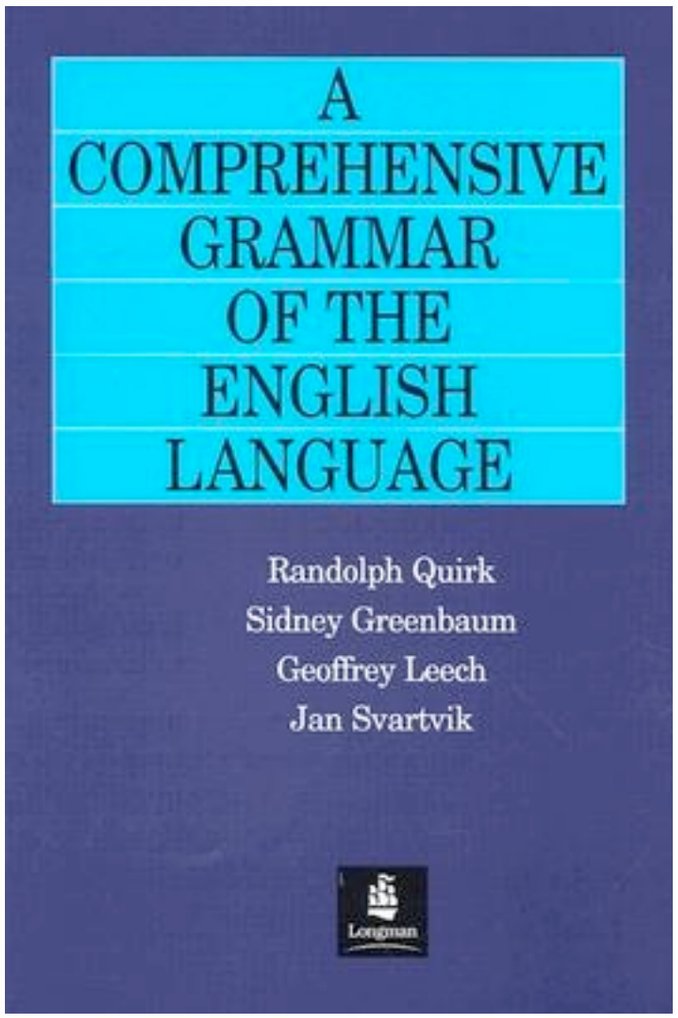
Bekwarra
Sample Text

Hit load, hand balancing, and finger balancing

Text input

And we hope to do different things by using text...

Filling various social communicative functions



Assumptions about success

- allow the digital text input of an orthography
- allow typing a text without fatigue
- maximize typing speed
- reduce the number of typing errors
- allow rapid mastery of the touch typing method

What to compare

Six criteria

- tapping load distribution
- number of keystrokes
- hand alternation
- finger alternation
- finger posture
- hit direction (little finger to thumb)

Keyboarding Typology

- Single Character Key example - QWERTY
- Single finger keyboard
- Multiple Character Keyboard - T9 phone
- Multiple finger Keyboard

What else is helpful to compare?

- Perceptual distance
- Measuring dissonance

Finger load

Finger	1	2	3	4	5	6	7	8	9	10	Total Keystrokes	
ENG finger count	1,18	1,017	1,895	2,316	2,530	0	2,351	845	1,619	292	14,048	
											13369	95.17%
ENG finger load	8.42	7.24%	13.49%	16.49%	18.01%	0%	16.74%	6.02%	11.52%	2.08%	100%	
EZA finger count	1,31	1,268	2,124	1,442	3,011	0	3,710	1,630	1,931	3,558	19,990	
											17141	85.75%
EZA finger load	6.58	6.34%	10.63%	7.21%	15.06%	0%	18.56%	8.15%	9.66%	17.80%	100%	
BKV finger count	2222	300	1822	1968	3641	0	4280	2884	503	2342	19962	
											18275	91.55%
BKV finger load	11.1	1.50%	9.13%	9.86%	18.24%	0%	21.44%	14.45%	2.52%	11.73%	100%	

Conceptualizing the problem space

- Distance - Time equation
  - The shortest distance between two points is a straight line.

Some socio-technical implications

- Our devices help us to make choices about language use.
- These choices have long reaching impacts for language vitality.