WAIT, IT DOES ??TAHW
How supporting Right-to-Left can expose your bad UX decisions

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About me

Front End Senior Engineer @ Global Collaboration Team, Wikimedia Foundation
Right-to-Left support enthusiast
Occasional answerer in StackOverflow

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... an emoji

Moriel Schottlender
http://rtl.wtf
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Introduction: Languages and Wikipedia
<table>
<thead>
<tr>
<th>Site</th>
<th>Daily Time on Site</th>
<th>Daily Pageviews per Visitor</th>
<th>% of Traffic From Search</th>
<th>Total Sites Linking In</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google.com</td>
<td>7.57</td>
<td>8.58</td>
<td>3.00%</td>
<td>3,560,046</td>
</tr>
<tr>
<td>Enables users to search the world’s information, including webpages, images, and videos. Offers...More</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Youtube.com</td>
<td>8.42</td>
<td>5.15</td>
<td>14.30%</td>
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</tr>
<tr>
<td>User-submitted videos with rating, comments, and contests.</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facebook.com</td>
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<td>4.00</td>
<td>7.70%</td>
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</tr>
<tr>
<td>A social utility that connects people, to keep up with friends, upload photos, share links and ...More</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baidu.com</td>
<td>7.58</td>
<td>6.48</td>
<td>8.20%</td>
<td>137,783</td>
</tr>
<tr>
<td>The leading Chinese language search engine, provides “simple and reliable” search exp...More</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wikipedia.org</td>
<td>4.13</td>
<td>3.32</td>
<td>66.10%</td>
<td>1,722,890</td>
</tr>
<tr>
<td>A free encyclopedia built collaboratively using wiki software, (Creative Commons Attribution-Share...More</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yahoo.com</td>
<td>4.06</td>
<td>3.82</td>
<td>7.60%</td>
<td>648,102</td>
</tr>
<tr>
<td>A major internet portal and service provider offering search results, customizable content, cha...More</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
~285 content languages

- Each Wikipedia is a unique community
- 424 interface languages available
- ~120,000 combinations
~285 content languages

- Each Wikipedia is a unique community
- 424 interface languages available
- ~120,000 combinations
Introduction to Right-to-Left
Scripts written Right-to-Left

The quick brown fox jumps over the lazy dog

Left to Right (LTR)
Scripts written Right-to-Left

The quick brown fox jumps over the lazy dog

שף אכל קצה גור בט酣 חסה, ודוי

Left to Right (LTR)

Right to Left (RTL)
The mental model
Welcome to Wikipedia,
the free encyclopedia that anyone can edit.
5,470,220 articles in English

From today's featured article

Steve Biko (12 December 1946 – 12 September 1977) was a South African anti-apartheid activist. Fighting racial segregation and white minority rule in South Africa, Biko was at the forefront of the grassroots Black Consciousness Movement during the late 1960s and 1970s. Estranged by the domination of white radicals in the anti-apartheid movement, he became a leading figure in the creation of the South African Students' Organisation in 1968. An African nationalist and African sociologist, he was influenced by Frantz Fanon and the African-American Black Power movement. He promoted its slogan "black is beautiful," believing that black people needed to rid themselves of any sense of racial inferiority. In 1977, he helped found the Black People's Convention to spread these ideas among the wider population. Though the government banned Biko in 1973, he remained politically active. He was arrested in August 1977 and severely beaten by state security officers, resulting in his death. One of the earliest icons of the movement against apartheid, he is regarded as a political leader. (Full article)

Did you know...
- that Peter Gabriel (pictured) wrote "Biko" after learning of the death of Steve Biko in police custody on 12 September 1977?
- that Danish-born Jørgen Jensen was awarded the Victoria Cross for an action during which he pulled a jeep from a bomb grenade with his teeth?
- that Fran Dunphy has been with any other Penn Quakers men's soccer coach with 230 overall including 151 conference wins?
- that Lila B. Herrick was called a "truthbender" as she "made a place for women" at Montana State College?
- that the Phyllodes tumor can form "toes" as they crawl across the beach towards cancer?
- that Reinhard Peters conducted several new operas and one of his works, the opera "The Canticle of Leopoldo" is a parable about the life of a king who is reincarnated as a dog?

Related changes
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Contributors
Create account
Login
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Contents
Featured content
Current events
Random article
Donate to Wikipedia
Wikipedia store
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Help
About Wikipedia
Community portal
Recent changes
Contact page
Recent changes
Topic
View source
View history
Search Wikipedia

 trope

 trope

 trope
Welcome to Wikipedia,
the free encyclopedia that anyone can edit.
5,472,320 articles in English

From today's featured article

Steve Biko (12 December 1946 – 12 September 1977) was a South African anti-apartheid activist. Fighting racial discrimination and white minority rule in South Africa, Biko was at the forefront of the grassroots Black Consciousness Movement during the late 1960s and 1970s. Estranged by the domination of white radicals in the apartheid movement, he became a leading figure in the co-optation of the South African Students' Organisation in 1968. An African nationalist and African socialist, he was influenced by Franz Fanon and the African-American Black Power movement. He promoted his slogan "black is beautiful," believing that black people needed to rid themselves of any sense of racial inferiority. In 1977, he helped found the Black People's Convention to spread these ideas among the wider population. Though the government banned Biko in 1977, he remained politically active. He was arrested in August 1977 and severely beaten by State security officers, resulting in his death. One of the earliest icons of the movement against apartheid, this is regarded as a political victory.

Recently featured: Benedict Arnold's expedition to Quebec - North Eastern Railway War Memorial - California Diamond Jubilee half dollar - Archive - By small - More featured articles

Did you know...

- that Peter Gabriel (pictured) wrote "Biko" after learning of the death of Steve Biko in police custody on 12 September 1977?
- that Danish-born Jørgen Jensen was awarded the Victoria Cross for an action during which he pulled the sash from a hand grenade with his teeth?
- that Fran Drescher has more wins than any other Peck Quakers basketball coach with 350 overall including 191 conference wins?
- that Una B. Herrick was called a "traholster" as she made a place for women at Montana State College?
- that Phyllisbee can form a "swarm" as they crawl across the beach towards carcasses?
- that Reinhard Peters conducted several new operas and Wilhelm Kienzler's The Commandant de Léopard, and a number of his compositions.

On this day

September 12

- 1346 - Switzerland became a federal state with the adoption of a new constitution.
- 1791 - Guzhao's Military Symphony No. 1, one of the largest-scale chamber works in the classical concert repertoire, was first performed in Munich.
- 1942 - World War II: The Imperial Japanese Army began the Battle of Midway in an effort to isolate Henderson Field on Guadalcanal.
- 1990 - The Turkish Armed Forces ousted Prime Minister Süleyman Demirel and ruled the country for three years before democracy was restored.
- 1997 - "Airbus Space Shuttle Endeavour" American Ale Jemison (picture) became the first black woman in space.

Arabic

العربية

Bosanski

Bosanski

Čeština

Czeč

Dansk

Danish

Deutsch

German

Eesti

Estonian

Ελληνικά

Greek

Esperanto

Esperanto

Español

Spanish

Suomi

Finnish

Français

French

Magyar

Hungarian

Italiano

Italian

日本語

Japanese

한국어

Korean

Македонски

Macedonian

Nederlands

Dutch

Norsk

Norwegian

Polski

Polish

Português

Portuguese

Русский

Russian

Slovenčina

Slovak

Slovene

עברית

Hebrew

Реалестрик

Chinese

Español (Ecuador)

Spanish (Ecuador)

العربية

Arabic

Bosanski

Bosanski

Čeština

Czeč

Dansk

Danish

Deutsch

German

Eesti

Estonian

Ελληνικά

Greek

Esperanto

Esperanto

Español

Spanish

Suomi

Finnish

Français

French

Magyar

Hungarian

Italiano

Italian

日本語

Japanese

한국어

Korean

Македонски

Macedonian

Nederlands

Dutch

Norsk

Norwegian

Polski

Polish

Português

Portuguese

Русский

Russian

Реалестрик

Chinese

Español (Ecuador)

Spanish (Ecuador)

العربية

Arabic

Bosanski

Bosanski

Čeština

Czeč

Dansk

Danish

Deutsch

German

Eesti

Estonian

Ελληνικά

Greek

Esperanto

Esperanto

Español

Spanish

Suomi

Finnish

Français

French

Magyar

Hungarian

Italiano

Italian

日本語

Japanese

한국어

Korean

Македонски

Macedonian

Nederlands

Dutch

Norsk

Norwegian

Polski

Polish

Português

Portuguese

Русский

Russian

Реалестрик

Chinese

Español (Ecuador)

Spanish (Ecuador)
Expectations of where things are placed on the screen

Definitions of ‘start’ & ‘end’ ‘backwards’ & ‘forwards’

Typing mixed content in mixed directionalities

Unicode Bidirectional Algorithm http://unicode.org/reports/tr9/
Right-to-Left in Wikipedia
17 Right-to-Left Wikipedias

- RTL and mixed content
17 Right-to-Left Wikipedias

- RTL and mixed content
Quick intro: Unicode Bidirectional Algorithm
BiDi Entity Types (really really simplified)

Strong

Weak

Neutral
BiDi Entity Types (really really simplified)

**Strong**  Affect the directionality of entities around them

**Weak**  Do not affect the directionality of entities around them (are affected)

**Neutral**  Follow the directionality of the context they’re in
BiDi Entity Types (really really simplified)

**Strong**  Affect the directionality of entities around them

Alphabet

**Weak**  Do not affect the directionality of entities around them (are affected)

Punctuation, digits*

**Neutral**  Follow the directionality of the context they’re in

Space, newline, tab, etc
BiDi Entity Types (really really simplified)

... (Albert Einstein) הופע בנולד...
BiDi Entity Types (really really simplified)

...נולד ב... (Albert Einstein) אלברט איינשטיין
BiDi Entity Types (really really simplified)

עברית 123
BiDi Entity Types (really really simplified)

עברית 123 RTL
BiDi Entity Types (really really simplified)

עברית

עברית

עברית

עברית

עברית

עברית
BiDi Entity Types (really really simplified)

עברית

LTR 123

עברית

LTR 23

עברית

LTR 3 2 1
BiDi Entity Types (really really simplified)
BiDi Entity Types (really really simplified)

English 1 2 3 Hebrew 1 2 3 English
BiDi Entity Types (really really simplified)

English 1 2 3 3 2 1
עברית 1 2 3 3 2 1 English
BiDi Entity Types (really really simplified)

English 1 2 3 3 2 1 Šovrith English

LTR     RTL     LTR
BiDi Entity Types (really really simplified)

Input context

This is a sentence in an input.
direction = "ltr"

.This is a sentence in an input

direction = "rtl"
BiDi Entity Types (really really simplified)

Input context

This is a sentence in an input.
direction = "ltr"

This is a sentence in an input

direction = "rtl"
Intro to the Bidirectional Algorithm
(and examples of its challenges)

http://ltr.wtf/explained/intro-bidirectional-algorithm/

English is written left to right. Hebrew is written right to left. We know that. Browsers (for the most part) know that too, just like they know that the default directionality of a web page is left-to-right (LTR), and that if there is a setting that explicitly defines the direction to right-to-left, the page should flip like a mirror. Browsers are smart like that. Mostly.

But even browsers have problems when deciding what to do when languages are mixed up, and that, my friends, is a recipe for really weird issues when typing and viewing bidirectional text.

On The Bidirectionality of Characters and Strings

Before we delve into some interesting examples of mixed-up directionality problems, we should first go over how browsers consider directionality at all.

We already said that English is recognized as an "LTR" language (Left-to-Right), and Hebrew, Arabic, Urdu (and some others) as RTL languages (Right-to-Left). These are fairly clear, and if you type a string that consists of these languages on their own, the situation is more or less okay (but we'll go over some issues with that later)

But not all characters in strings are equal.

Hebrew and English (and a couple of others) are of the "strong" directionality types, the ones that not only have direction but also affect their surroundings. Some characters have "weak" directionality, where while they have directionality internally, they don't affect characters around them. And some characters are merely neutral, whereas they get their directionality by their surroundings. Oh, and there are also some characters that may (and do) flip around visually depending on the text they're in.
But my product doesn’t need internationalization!
Everyone needs internationalization!
Everyone needs internationalization!

Globalization
Diversity
Inclusiveness
Bigger markets
Everyone needs internationalization!

Globalization
Diversity
Inclusiveness
Bigger markets

Better code
Generic
Extendible
Easier to manage
Everyone needs internationalization!

Globalization
Diversity
Inclusiveness
Bigger markets

Better code
Generic
Extendible
Easier to manage

Better product
Planning for Right-to-Left Support makes your product better
Planning for Right-to-Left Support makes your product better

Bad UX decisions aren’t always obvious
Planning for Right-to-Left Support makes your product better

Bad UX decisions aren’t always obvious. Right-to-Left can help expose them.
Example

Naming product (and code) actions
Left

Right

Popup edge left

Popup indicator alignment: left
This popup has a header that contains a label and a close button. Note that labels are only used in the close button. If no label is set, only the close button will appear.

popup indicator alignment: left

popup indicator alignment: backwards

popup edge left

popup edge beginning

popup edge after

popup edge forwards

popup edge start

popup edge backwards

popup edge before

popup edge end

popup edge backwards

popup edge forwards

popup edge center

popup edge backwards

popup edge forwards

popup edge center
Toolbars

LTR

RTL
Toolbars

LTR

RTL
Toolbars
Toolbars

LTR

RTL
Toolbars
Toolbars

LTR

RTL
Toolbars
Flipping all icons

LibreOffice

LTR
Flipping all icons

LibreOffice

LTR

RTL
Flipping all icons

LibreOffice

LTR

RTL

5?
Flipping all icons

Wikimedia’s VisualEditor
Flipping all icons

Wikimedia’s VisualEditor
● Think about your actions and what they mean

Interface (and code) actions
Think about your actions and **what they mean**

- Separate **literal actions** from **action’s purpose**
  - Do you really mean “go left” or do you mean “go to beginning”?

**Interface (and code) actions**
Interface (and code) actions

- Think about your actions and **what they mean**
- Separate **literal actions** from **action’s purpose**
  - Do you really mean “go left” or do you mean “go to beginning”?
- Consider the **real meaning of your icons**
  - When you flip for RTL, watch out for unnecessary flipping of icons
● Think about your actions and what they mean
● Separate literal actions from action’s purpose
  ○ Do you really mean “go left” or do you mean “go to beginning”?
● Consider the real meaning of your icons
  ○ When you flip for RTL, watch out from unnecessary flipping of icons
● If you already flip icons, flip them properly

Interface (and code) actions
Think about your actions and what they mean
Separate literal actions from action’s purpose
  ○ Do you really mean “go left” or do you mean “go to beginning”?
Consider the real meaning of your icons
  ○ When you flip for RTL, watch out from unnecessary flipping of icons
If you already flip icons, flip them properly

Thinking about what things should look like in RTL can help you clarify the UI for your users
Example

Numbers and Non-numbers
Phone: 555-123-4567

555-123-4567
Phone: +1-555-123-4567

טלפון: 555-123-4567
Phone: +1-555-123-4567

1-555-123-4567+
Phone: +1-555-123-4567

(Unicode Bidirectional Algorithm)

http://ltr.wtf/explained/intro.bidirectional-algorithm/
Phone: +1-555-123-4567

Weak entity - Right to Left context!

Beware of native mobile apps that automatically switch RTL for inputs...

(Unicode Bidirectional Algorithm)

http://ltr.wtf/explained/intro-bidirectional-algorithm/
Username: MSchottlender (WMF)

(Unicode Bidirectional Algorithm)
http://ltr.wtf/explained/intro-bidirectional-algorithm/
Username: MSchottlender (WMF)

(Unicode Bidirectional Algorithm)
http://ltr.wtf/explained/intro-bidirectional-algorithm/
Username: ויקימדיה

(Unicode Bidirectional Algorithm)

http://ltr.wtf/explained/intro-bidirectional-algorithm/
Input with mixed number & non-numbers content

- Watch for misleading characters
  - Parentheses, plus, minus, commas, periods, etc
  - Go over the Unicode Bidirectional Algorithm!
    http://ltr.wtf/explained/intro-bidirectional-algorithm/
Input with mixed number & non-numbers content

- Watch for misleading characters
  - Parentheses, plus, minus, commas, periods, etc
  - Go over the Unicode Bidirectional Algorithm!
    http://ltr.wtf/explained/intro-bidirectional-algorithm/

- Be aware of where your OS or environment switches context for you
  - Always dictate directionality when it’s important to preserve it
Example

Content vs. Interface
Bienvenidos a Wikipedia,
la enciclopedia de conocimiento libre que todos pueden editar.
Acceso móvil - Contacto - Donaciones - Libro de visitas

Participación y comunidad
¿Cómo colaborar? - Bienvenida - ¿Eres profesor o alumno?
Primeros pasos - Contenidos de ayuda
Café - Preguntas frecuentes - Los cinco planes

Artículo destacado
La batalla del Nilo —también conocida como la batalla de la bahía de Abukir, en inglés como Battle of the Nile, en francés como la Bataille d'Aboukir y en árabe egipcio como معركة بحيرة أعبكير— fue un gran combate naval librado entre la Marina Real Británica y la Marina de la Primera República Francesa en la bahía de Abu Qir, en la costa mediterránea de Egipto, del 1 al 3 de agosto de 1798. La batalla fue el punto culminante de la campaña naval que se había extendido a lo largo de todo el mar Mediterráneo durante los tres meses anteriores, cuando un convoy francés partió desde Toulon hacia Alexandria, a bordo del cual llevaba una fuerza expedicionaria bajo el mando del entonces general Napoleón Bonaparte. En la batalla, las fuerzas inglesas, dirigidas por el contraalmirante sir Horatio Nelson —más tarde conocido como Lord Nelson—, devastaron a los franceses.

Artículo bueno
La equipa cólinda (Líonesa)
Spanish content with English interface

Bienvenidos a Wikipedia, la enciclopedia de contenido libre que todos pueden editar.

Participación y comunidad
Cómo colaborar • Bienvenida • ¿Eres profesor o alumno?
Primero pasos • Contenidos de ayuda
Café • Preguntas frecuentes • Los cinco planes

Actualidad

Artículo destacado
La batalla del Táyo —también conocida como la batalla de la bahía de Abukir, en inglés as Battle of the Nile, en francés como la bataille d’Aboukir y en árabe como غزوة الأبيض— fue un gran combate naval librado entre la Marina Real Británica y las Armadas de la Primera República Francesa en la bahía de Abu Qir, en la costa mediterránea de Egipto, del 1 al 3 de agosto de 1798. La batalla fue el punto culminante de la campaña naval que se había extendido a lo largo de todo el mar Mediterráneo durante tres meses anteriores, cuando un convoy francés partió desde Tolón hacia Alejandría, a bordo del cual viajaba una fuerza expedicionaria bajo el mando del entonces general Napoleón Bonaparte. En la batalla, las fuerzas inglesas, dirigidas por el contraalmirante sir Horatio Nelson —más tarde conocido como lord Nelson—, derrotaron a las francesas.

Bonaparte trataba de invadir Egipto como el primer paso de una campaña contra la India británica, en un intento de sacar a Gran Bretaña de las Guerras revolucionarias francesas. Mientras la flota de Bonaparte cruzaba el Mediterráneo, una fuerza británica bajo el mando de Nelson, lo cual había sido enviado desde la flota del río Tajo con el fin de adquirir el objetivo de la expedición francesa y detenerla, comenzó su persecución. Durante más de dos meses, persiguió a los franceses, llegando a estar en algunas ocasiones a tan solo unas horas de ellos. Bonaparte, que conocía los planes de Nelson, guardó con total discreción su destino y consiguió tomar Malta y después llegar a Egipto sin ser interceptado por las fuerzas navales británicas.

Artículo bueno
La aguja colipinta (Liríme) Amazonica es una especie de ave

Spanish content

Bienvenidos a Wikipedia, la enciclopedia de contenido libre que todos pueden editar.

Participación y comunidad
Cómo colaborar • Bienvenida • ¿Eres profesor o alumno?
Primero pasos • Contenidos de ayuda
Café • Preguntas frecuentes • Los cinco planes

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Artículo bueno
La aguja colipinta (Liríme) Amazonica es una especie de ave
erton תחבושת הגנת שInView. בין התוכן של המ족ב._PRI являются (P:dvaו)

לprecedented

ד"ה Albert Einstein

(14) מרץ 1879 – 18 במרץ 1955) היה יידי

ברנש, מדלי המتشكן בכ-40 המטרים.

אינטסינק בודד החואקינ.extent תומך. אינטסינק תומך, בא

המקניפ הקלאסי, של ה-18 למלגה. לוגן

ה-20 ובנימה בשחית

ההופך, המחלקה והנושאים המרכזים, שעש

קורותיו, לפסוק הקטן בקינטוק, להמקיע ספיט

ולאטרסס החמישה ב-1921) ספר.

לапрorroד את המדע המודרני, היה לארטנש טほうが

ששלוחם בשתיים, עלי השמידה

והאפקטיביות. 1

1-1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.17.18.19.20.21.22.23.24.25.26.27.28.29.30.31.32.33.34.35.36.37.38.39.40.
RTL content with LTR interface
Is this interface or content?

Should it be flipped?
Separate your content from interface

- Define your product’s pieces properly
Separate your **content from interface**

- Define your **product’s pieces** properly
- Content (especially user-generated) should be **isolated from the interface**
  - (As much as possible)
Separate your content from interface

- Define your **product’s pieces** properly
- Content (especially user-generated) should be isolated from the interface
  - (As much as possible)
- Reason your way through the actions that are content-dependent vs. interface-driven
Example

Inconsistent mobile and web experience
Maximum 2 Terms
• Make sure the experience in *mobile and web* are consistent
Mobile and web experience

- Make sure the experience in mobile and web are consistent
- Right to Left bugs are helpful in flushing inconsistencies out
Mobile and web experience

- Make sure the experience in **mobile and web** are consistent
- Right to Left bugs are helpful in **flushing inconsistencies** out
- If you decided to “guess” user intent, be consistent
User-generated content
New topic created on Discussion board 1: "New topic 2".
I just wanted to post a new topic
New topic created on Discussion board 1: "New topic 2".
I just wanted to post a new topic.

New topic created on Discussion board 2: "New topic 1".
I just wanted to post a new topic.
New topic created on <bdi>[board name]</bdi>: “<bdi>[topic title]</bdi>”
New topic created on <bdi>[board name]</bdi>: “<bdi>[topic title]</bdi>”
### Gmail flight display (RTL Gmail)

<table>
<thead>
<tr>
<th>Flight</th>
<th>Destinations</th>
<th>Departure</th>
<th>Arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkish 790</td>
<td>İstanbul IST to Tel Aviv-Yafo TLV</td>
<td>20:20 IST</td>
<td>21:00 TLV</td>
</tr>
<tr>
<td>Turkish 80</td>
<td>İstanbul IST to San Francisco SFO</td>
<td>18:10 IST</td>
<td>13:05 SFO</td>
</tr>
<tr>
<td>Turkish 79</td>
<td>San Francisco SFO to İstanbul IST</td>
<td>13:05 SFO</td>
<td>18:10 IST</td>
</tr>
<tr>
<td>Turkish 865</td>
<td>İstanbul IST to Tel Aviv-Yafo TLV</td>
<td>8:40 IST</td>
<td>9:40 TLV</td>
</tr>
<tr>
<td>Flight</td>
<td>Departure</td>
<td>Destination</td>
<td>Time</td>
</tr>
<tr>
<td>--------</td>
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<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td>Turkish 790</td>
<td>IST 14:20</td>
<td>TLV</td>
<td>20:20</td>
</tr>
<tr>
<td>Turkish 80</td>
<td>IST 13:10</td>
<td>SFO</td>
<td>18:10</td>
</tr>
<tr>
<td>Turkish 79</td>
<td>IST 13:05</td>
<td>SFO 28</td>
<td>13:05</td>
</tr>
<tr>
<td>Turkish 865</td>
<td>IST 28</td>
<td>TLV</td>
<td>8:40</td>
</tr>
</tbody>
</table>
Gmail flight display

8:40 בֶּפִּיוֹן, 8 בפִּיוֹזָלְיָה, IST 28 אל TLV
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<td>SFO 28 IST</td>
</tr>
</tbody>
</table>

**TLV to IST** 28 May, 8:40

8:40 IST 28 May, TLV
TLV to IST 28 May, 8:40

IST 28 8:40 TLV
Gmail flight display

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<tr>
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**TLV to IST** 28 May, 8:40

8:40 **IST** 28 אל **TLV**
Gmail flight display

28 May, 8:40

From TLV to IST

8:40 IST to TLV
TLV to IST 28 May, 8:40

IST 28 May, 8:40 to TLV

(TLV) (Isolate) (IST) (Isolate)
• Make sure all user-generated content is isolated
  ○ You never know what your users type...

User-generated content
User-generated content

- Make sure all user-generated content is isolated
  - You never know what your users type...
- Beware of comments, usernames, taglines or any other element that can be custom
User-generated content

- Make sure all **user-generated content is isolated**
  - You never know what your users type...
- Beware of comments, usernames, taglines or any other **element that can be custom**
- Validating characters **isn’t always enough** if your interface can flip to RTL
  - Numbers and parentheses are a potential issue in a mixed environment
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- Beware of comments, usernames, taglines or any other element that can be custom
- Validating characters isn’t always enough if your interface can flip to RTL
  - Numbers and parentheses are a potential issue in a mixed environment
- You don’t always control interface direction!
  - Especially in emails or mobile operating systems
CSSJanus

- Started as a Google project
  (We took over when it stopped being maintained)
- Flips RTL/LTR positioning rules in CSS
- Available as
  - an npm module
    
    `npm install cssjanus`
  - PHP library
    
    `$rtlCss = CSSJanus::transform( $ltrCss );`

https://cssjanus.github.io/
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translatewiki.net

- Open source and standardized
- Provides context for translators
  - Users translate according to descriptions of the strings

https://translatewiki.net
Hide minor edits from recent changes

הוסרה עריכת משים בדף השינויים האחרונים

Special Preferences, tab 'Recent changes'. Offers user to hide minor edits in recent changes or not. This message supports the use of {{GENDER}}.
translatewiki.net

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https://translatewiki.net
translatewiki.net

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  - Users translate according to descriptions of the strings
- Supports powerful translation concepts
  - Supports parameters
  - Supports gender / plural rules
- Examples
  - '{{GENDER:$1|Welcome(m)|Welcome(f)}} to Wikipedia!’
  - ‘You have {{PLURAL:$1|an apple|many apples}} in your basket.’
  - ‘I have {{PLURAL:$2|one apple|many apples|0=no apples|12=a dozen apples}} in my basket.’

https://translatewiki.net
Welcome to online directionality flipping

Welcome to rtl.wtf, the site that will flip your brain and let you experience and experiment with right-to-left directionality online.

!?WTF

Yeah, so, by now you've realized that the alignment of this page is a wee bit off. If you've cheated and went to ltr.wtf (tsk tsk) then you may see things a bit more normal, or rather, a bit more like you are used to seeing them: from left to right.

What you see in rtl.wtf in its intended Right-to-Left alignment, where your page's point of origin is on the top right corner. If your main language is written from Left-to-Right (which is most of the languages that dominate the web) then this looks absolutely abominable to you.

Welcome to what Right-to-Left users feel browsing the web.

Mental model

When we read and write, our brain has a certain mental model it follows. For left-to-right languages, that means expecting everything — the sentence, the logo, the “beginning” of things — to be on the left. For Right-to-Left speakers and writers, that is the opposite. This is a source of frustration for a...
Summary

- Beware of mixed-content inputs
● Beware of **mixed-content inputs**
● Think about where **elements are placed** through your interface
  ○ And what it means to emphasize an element

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● Make sure UX is **unified across platforms**
● Make sure all **user-generated content is isolated**
● **Support i18n and support Right-to-Left!**
Everyone needs internationalization!

Globalization
Diversity
Inclusiveness
Bigger markets

Better code
Generic
Extendible
Easier to manage
Better product
Bonus:

Emoticons
Typing : and then )

LTR : )

RTL ( :
Typing : and then )

Typing : and then (
Typing : and then )

LTR : )
RTL ( :

Typing : and then (

LTR : ( 
RTL ) :

Typing : and then P

LTR : P
RTL P :

Typing : and then D

LTR : D
RTL D :