MICHIGAN STATE UNIVERSITY | Usability/Accessibility Research and Consulting

To: Robert Van Rennes, Big Ten Academic Alliance
From: Graham L. Pierce, MSU Usability/Accessibility Research and Consulting
Subject: Brill E-Books High-Level Accessibility Evaluation
Date: October 5, 2018

MSU Usability/Accessibility Research and Consulting (MSU UARC) conducted a high-level accessibility evaluation of Brill E-Books to evaluate its conformance with WCAG 2.0 AA Criteria. This evaluation did not include all functionality or content of the site or all WCAG 2.0 AA Success Criteria.

During this evaluation, a number of issues were found that will make the site and its content impossible to use for some individuals with disabilities, and difficult to use for most others.

Keyboard users, including screen reader users and users with dexterity impairments, will have difficulty or be unable to use significant site content. Most importantly, some content cannot be reached or operated via keyboard. Most interactive elements lack a sufficiently visible focus indicator, making it difficult or impossible for many keyboard-only users to effectively use them, as they cannot determine when they have reached the correct element. Focus order is also incorrect in some places, further increasing the difficulty of using the site with a keyboard.

Individuals with visual impairments that rely on screen readers will have additional problems. Title attributes are used incorrectly throughout the site, resulting in confusing and inappropriate information being read out. Structural information (including heading and list structure) is not appropriately conveyed to users, making it difficult to understand content organization. Many form inputs are not appropriately labeled, making those inputs difficult or impossible to use for those that rely on screen readers. Custom elements throughout the site do not correctly announce themselves or provide appropriate feedback to screen readers, making them difficult or impossible to understand and use. Most images have inappropriate alternative text, significantly impacting users with visual impairments, and images of text are used in place of styled text, impacting users with visual impairments and users with reading and cognitive impairments.

While text in PDFs is provided to screen readers, documents have not been tagged for accessibility and no structural information is provided to assistive technologies, making them extremely difficult to use for users with disabilities. Additionally, PDFs do not have a title or language set.

Other issues were found that will make it difficult for users with a variety of disabilities to effectively use the system, including invalid code, insufficient color contrast, color alone differentiating some content, and insufficient link context. Usability issues were also encountered, which will impact all users, regardless of disability status.

To improve access for users with disabilities, UARC recommends a full WCAG 2.0 AA evaluation and that the problems discovered be remediated.

Note: For the purposes of this high-level review, search results for "climate" were used as an example of a Search Results page, "Cultural Dynamics of Climate Change and the Environment in Northern America" was used as an example of a Book page, and

"Introduction: Climates and Cultures in Northern America" was used as an example of a Chapter page and PDF.

High-Level Findings

Document Structure

- PDF is untagged, and provides no structural information to assistive technologies. [WCAG 2.0 SC 1.3.1]
- Headings are not correctly used to organize content. [WCAG 2.0 SC 1.3.1]
  - "Michigan State University", "MICHIGAN STATE UNIVERSITY", and "Michigan State University" under "Your access is provided by:" should not be tagged as headings
  - Footer headings (i.e., "Site guide" and "Our Subjects:") should be h2s, not h4s
  - Headings in right sidebar (e.g., "Key", "Brill Online Books and Journals for") should be h2s, not h4s
  - On the Home and Search Results pages, "Filter" headings (e.g., "Filter bysubject") should be h2s, not h3s
  - On the Search Results page, search result items should be h2s (or h3s preceded by an h2)
  - On the Book page, "Chapters (17)" and "Overview" should be headings (h2s) when they are active/selected
  - On the Book page, chapter titles should be h3s, not h5s
  - On the Book page, "Related Content from Brill Online" in the Overview tab should be an h3, not an h4, and sub-headings should be h4s, not h5s
  - On the Chapter page, "Overview" should be tagged as a heading (h2)
  - On the Chapter page, "Introduction: Climates and Cultures in Northern America" in the Read lightbox should be tagged as a heading (h1)
- Lists are not correctly used to organize content. [WCAG 2.0 SC 1.3.1]
  - Icon links in page header (e.g., for "Books and Journals", "Reference Works", etc.) should be coded into a programmatic list
  - Social media icons should be coded into a programmatic list
  - Footer sections shouldn't be coded into a list (i.e., "Site guide" and "Our Subjects:" shouldn't be list items, but items under them should be)
  - In the page footer, list under "Our Subjects:" (i.e., "African Studies" through "Social Sciences") should be coded into a single list, not three separate lists
  - Headings in right sidebar (e.g., "Key", "Brill Online Books and Journals for") should not be coded into lists
  - On the Home page, "Sort by" should not be part of a list
  - On the Home page, letter links should be coded into a programmatic list
  - On the Home page, "Information" shouldn't be coded into the same list item as "Partial/No access"
  - On the Search Results page, "Type:" items should be list items (i.e., li tags, not divs or spans, which are not valid directly under ul tags)
  - On the Book page, "pp.:" text shouldn't be coded into one-item lists
- The language of the PDF is not defined. [WCAG 2.0 SC 3.1.1]

- Pages throughout the site use invalid XHTML and CSS code. [WCAG 2.0 SC 4.1.1]

Keyboard Support

- The "share this" icon cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Home page, "Show Description"/"Hide Description" links under "Most viewed content this month:" cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Book page, the "Export citations" expander can only be used once via keyboard (after it has been opened and closed once via keyboard, it can no longer be opened via keyboard). [WCAG 2.0 SC 2.1.1]
- On the Chapter page, page preview image links cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Chapter page, contents of the Read lightbox (other than "x" and "Open in a new window" links) cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Chapter page, "x" (close) and "Open in a new window" links in reader lightboard cannot be activated via keyboard. [WCAG 2.0 SC 2.1.1]
- Share icons are incorrectly reached immediately before right column content, instead of after other items in the page header. [WCAG 2.0 SC 2.4.3]
- The "back to top" link doesn't move keyboard focus to the top of the page (only the viewport is changed). [WCAG 2.0 SC 2.4.3]
- An invisible link before "Cookies" (read out as "blank") receives focus. [WCAG 2.0 SC 2.4.3]
- On the Home page, book cover images and book titles incorrectly receive focus separately. [WCAG 2.0 SC 2.4.3]
- Throughout the site, focus is not sufficiently visible for any interactive content, with the exception of text inputs. [WCAG 2.0 SC 2.4.7]

Navigation

- PDF lacks descriptive title. [WCAG 2.0 SC 2.4.2]
- Page size ("A") links, pager letter links (on Home page), and page number links (on Home page) lack context for screen reader users. [WCAG 2.0 SC 2.4.4]

Forms and Data Submission

- Username and Password inputs are not programmatically labeled. [WCAG 2.0 SC 3.3.2]
- On the Email this Page page, visual label text should be used for programmatic labels, not unnecessarily verbose title attribute text (e.g., "Please enter a valid email address for the recipient" should not be used in place of "Recipient's email address:"). [WCAG 2.0 SC 3.3.2]
- On the Email this Page page, required fields are not indicated (only one field has an asterisk, but all four are required). [WCAG 2.0 SC 3.3.2]
- On the Email this Page page, the asterisk in the checkbox label is not defined. [WCAG 2.0 SC 3.3.2]
- On the Advanced Search page, all inputs lack programmatic labels. [WCAG 2.0 SC 3.3.2]

Images

- Appropriate alternative text is not provided for visual content. [WCAG 2.0 SC 1.1.1]
    - "Image of" should not be included in any alternative text (e.g., Brill logo in page header)
    - "Button for" should not be included in any alternative text (e.g., "Search" and "Sign In" buttons)
    - "Brill Online Books and Journals icon" is decorative, and should have null alternative text
    - On the Home and Book pages, book covers are decorative, and should have null alternative text
    - On the Book page, "MyBook" is not appropriate alternative text for "Brill MyBook" graphic (i.e., "Brill" is missing from the alternative text)
    - On the Book page, "PDF" is not appropriate alternative text for "Read" button (i.e., the alternative text must include "Read" as well as "PDF")
    - On the Chapter page, images of pages lack alternative text
- Images of text are used instead of styled text. [WCAG 2.0 SC 1.4.5]
    - "Search" and "Sign In" buttons
    - "Read" button on the Book page
    - Page previews on the Chapter page

Color and Visual Characteristics

- Blue and light blue text on white and light grey backgrounds (e.g., links throughout site) and white text on brown background (e.g., "Cookies", "Shopping cart", etc.") have insufficient contrast. [WCAG 2.0 SC 1.4.3]
- Color is the only means to distinguish between selected navigation items (e.g., "E-Books" vs. "Home"). [WCAG 2.0 SC 1.4.1]

Custom Elements and Dynamic Content

- Throughout the site, "title" attributes are used inappropriately and unnecessarily, and convey incorrect, redundant, or unnecessary information to screen readers, and are relied on to convey information to screen readers in place of the correct tags/attributes/code. [WCAG 2.0 SC 4.1.2, WCAG 2.0 SC 2.4.6]
- Text links should not have "alt" attributes defined (e.g., "link to Advance search" on "Advanced Search" link). [WCAG 2.0 SC 4.1.2, WCAG 2.0 SC 2.4.6]
- Search autocomplete provides incorrect information to screen reader users (e.g., "ten results are available" when only five are displayed). [WCAG 2.0 SC 4.1.2]
- On the Home page, roles and values (i.e., that it expands/collapses content and whether content is expanded or collapsed) are not provided for "See more..." and "Hide" links, and screen readers are not notified when they are changed. [WCAG 2.0 SC 4.1.2]
- On the Book and Chapter page, roles and values (i.e., that they are tabs and whether they are selected) are not provided for tabs ("Overview" and "Chapters (17)"), and screen readers are not notified when they are changed. [WCAG 2.0 SC 4.1.2]
- On the Book page, screen readers are not notified when the "More >" link is activated and additional content is displayed. [WCAG 2.0 SC 4.1.2]

Usability Observations

- Text mistakes are present throughout the site, including typos (e.g., "Filter bysubject", "Filter bycontent type"), inconsistent capitalization between parallel headings (e.g., "Site guide" and "Our Subjects), and text repeated multiple times in a row (e.g., , "Your access is provided by: Michigan State University MICHIGAN STATE UNIVERSITY Michigan State University").
- On the Home page, "Filter bysubject" links do not work (no results are displayed).
- On the Search Results page, sorting by "Newest titles first" or "Oldest titles first" creates confusion, as dates are not provided in search results.
- On the Chapter page, "Open in a new window" link in Read lightbox is not functional.
- It is unclear when "Partial/No access" is available. The "Key" section includes an icon of an open white box with a grey border for that status (which parallels the shape and format of other access icons), but no such icons are present on pages, and it is unclear whether the lack of an icon is intended to convey that information.