

Supplementary Information for the article:

Creating a climate changed future with the sea level rise interactive-fiction game 'Lagos2199'

Methodological supplement 'Lagos2199' game

Character design methods

Initial concepts for each character were developed, and iterated until the final art was complete. Importantly, as the character art was developed, this process modified the narrative itself. This feedback between art and scenario development was very important for the final game experience, and emphasized the need for responsiveness and narrative agility in story-based narrative design. The user does not have a visual character in the story. This was intentional to allow any user to project themselves into the role of the water taxi operator.

To start the design process for the non-player characters that would populate the game, a synopsis of each character was drafted including details about who they were, what part in the story they played and a short list of descriptive details of appearance to provide a jumping off point for creating designs. There was no specific gender or age assigned to any character, but that eventually came out organically through the creative process. Reference material was significantly used to capture modern day clothing, which would then be given futuristic aspects for the setting. This included taking the Nigerian Agbada and giving it a more fitted look for the businessperson character, and a more loose and stylized look for the tourist character. Modern day Nigerian military uniforms were used as reference for the Coast Guard character, allowing for the creation of a uniform for a currently non-existent branch of law enforcement in Lagos prior to the sea level rise event of the game.

The characters were initially hand-drawn, the drawings then shared with the game design team for review before further work would be done to digitally ink and color the drawings. This was an important step to allow opinions of the group to be voiced about the design of the characters and any aspects that did not fit in the narrative. For example, one character was visiting the Lagos Bay area from the Lunar University on the Moon, and the initial design included the torso of a partially disassembled space suit (Fig S1a). However, upon discussion, a space suit would not fit the heightened temperatures that global warming would be exhibiting in the year 2199, particularly in tropical Lagos. This led to the character having a more skin-tight suit with a vest; the vest having patches identifying Nigeria, the Lunar University and the activist stance of the character (Fig S1b). This enriched the character's background more than identifying the character coming from space by wearing a spacesuit.

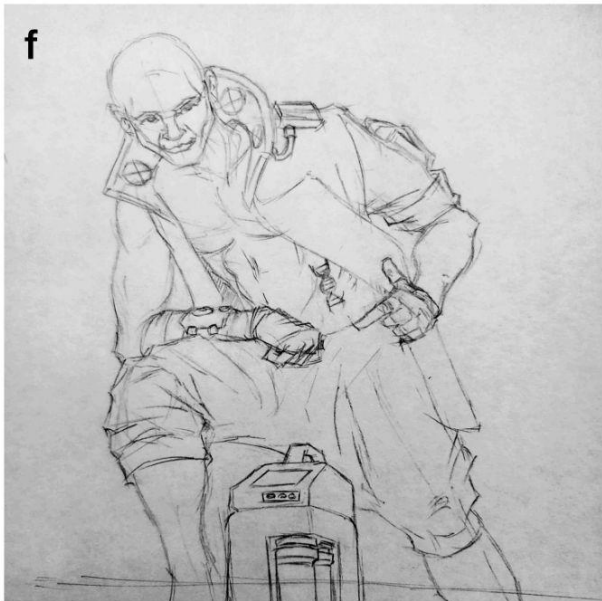
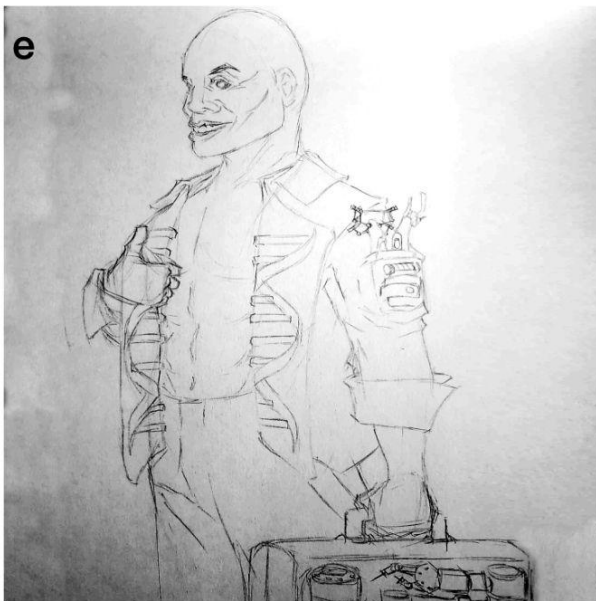
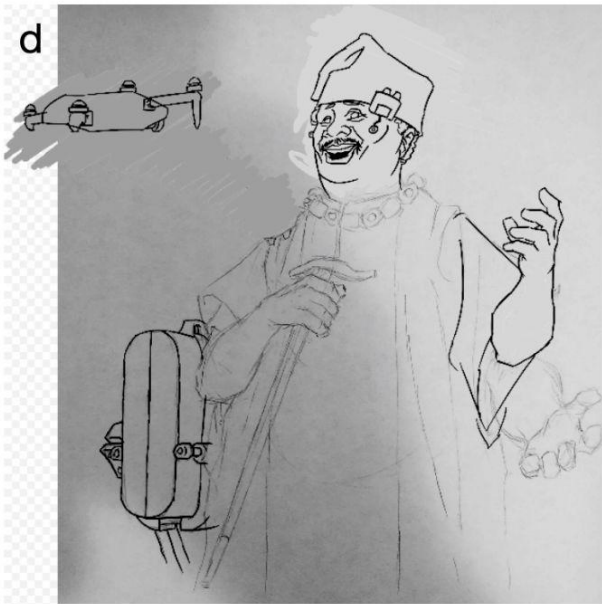
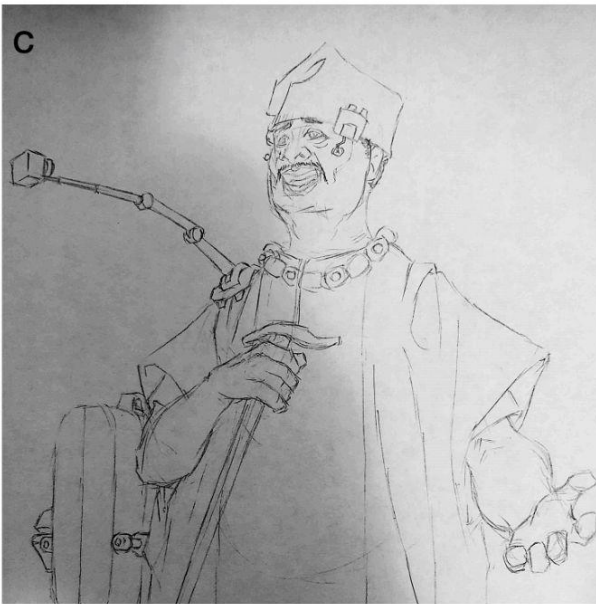
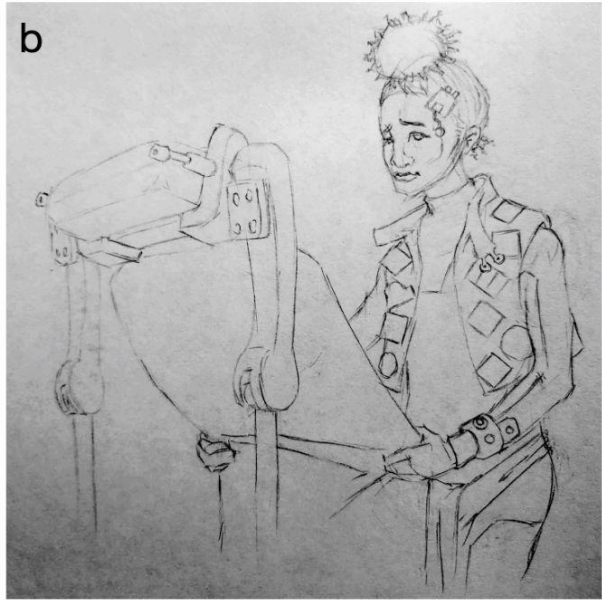
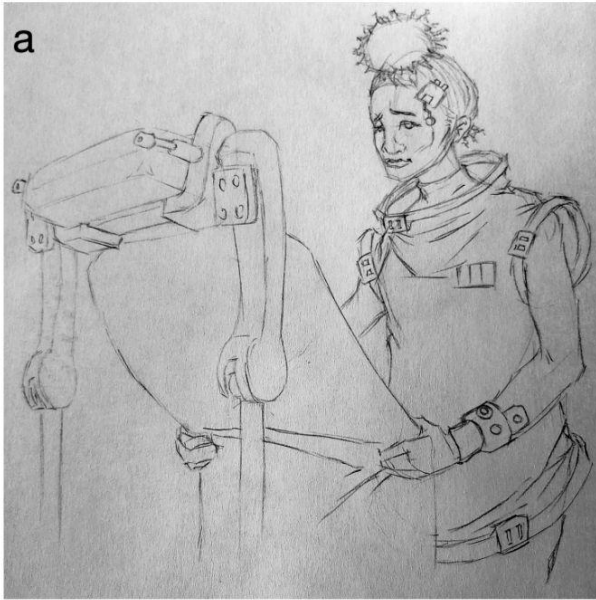


Figure S1. Example of character development process for a,b) the Student from the Lunar University, c,d) the Tourist, and e,f) the Gene Edit dealer.

Additionally, small modifications were made to make characters more expressive. Through the character design process, using the digital inking mechanism to make modifications was helpful in that the original hand-drawn design did not have to be modified, all adjustments could be made digitally. For example, the tourist character is actively vlogging and orating, and to make the character more futuristic and more expressive, the camera on selfie stick and lowered arm were digitally edited out and replaced with a vlogging drone and raised arm (Fig S1c,d).

Other times the initial concept did not really hit the mark, such as the gene edit dealer. Initial concept was too overt in design, had anachronistic tools, and did not suitably convey potential menace (Fig S1e). In this case, a new concept was drawn up, allowing the character to covertly reveal their status as a Gene Edit dealer, the tools of the trade looking more streamlined and futuristic (Fig S1e,f).

Once the design was agreed upon, the digital inking and coloring occurred. This included the use of a pressure-sensitive pen tablet such that the line work in the digital inking would look drawn rather than have a static width. In the digital drawing application, it allowed for different layers to be added to the artwork, allowing the inking to occupy layers separate and above the coloring layers. The artwork could then be broken up into foreshortened pieces, each piece worked on separately, allowing quick rework to be done on one piece without affecting other pieces. The layers having transparent backgrounds allowed for making semi-transparent elements such as the holographic screens present in many of the character designs. Coloring for clothing and peripherals was done in a comic book fashion, with simple shadows to make the images more pronounced. In contrast, multiple references were used to capture the diversity of skin tones of the characters, and the skin was inked using a more blended approach giving it a softer feel. Digital color palettes were made to keep colors consistent between the different layers of the digital art. Four final character renders are shown in the main manuscript in Figure 4.

Environment and concept art

Using photographic material that is in the public domain or under permissive Creative Commons licenses, we created immersive artwork to accompany the stories. Given that the future depicted in the story is radically different from the existing world, these photos were manipulated using the freely available GNU Image Manipulation Program (GIMP). The manipulation of the photos

ranged from simple application of preset image-manipulation filters within the GIMP program, to multi-image composites. For example, the environment for Old Lagos (a waypoint in the game), includes photographic sources that were digitally manipulated in GIMP (Fig S2).



Figure S2. Example of the components of a multi-image composite including a coastal lighthouse, destroyed and decaying buildings, and tangled vegetation. While these source images are blended throughout the composite, elements from the originals on the left are indicated in the composite on the right.