

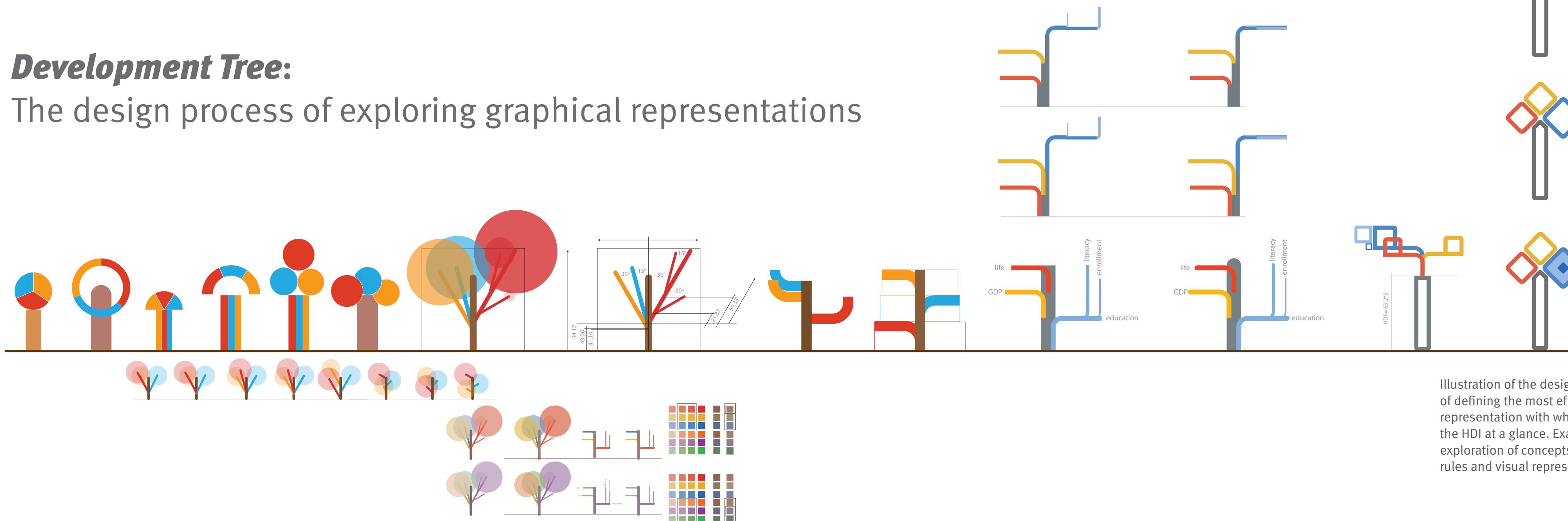
## Human Development Index: a case study in graphical representation

The poster describes the process of developing graphical metaphor and representations of the Human Development Index—HDI—and its components (United Nations Development Programme): the *Development Tree*. The project was commissioned by **César A. Hidalgo**, head of MacroConnections group, MIT Media Lab, and Faculty Associate, Center for International Development, Harvard University, while writing the “Graphical Statistical Methods for the Representation of the Human Development Index and its Components,” for the Human Development Report Office (Hidalgo, 2010). Concept and visual representations were developed by **Isabel Meirelles** in collaboration with Northeastern University students during Spring 2010, prior to their graduation: **Geoff House, David Landry** and **Alex Simoes**.

The objective was to explore the use of visual representations as an alternative to the mathematical forms currently used to aggregate the HDI. The HDI is a composite measure of one health, one income and two education indicators, which are aggregated numerically through a set of formulas that reduce all these dimensions to a single number. To keep the information on the dimensions that get aggregated away when done numerically, we proposed representing the HDI graphically as a tree, where the trunk represents the total aggregate value, and the branches its components and subcomponents. By using appropriate design rules for the sizes of each branch we preserve the information encoded in the mathematical definition of the HDI, and augment it, by providing a representation that allows differentiating between countries that might differ in HDI structure despite having a similar aggregate HDI value.

Hidalgo, César. (2010). “Graphical Statistical Methods for the Representation of the Human Development Index and its Components.” *Human Development Research Paper 2010/39* <[http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP\\_2010\\_39.pdf](http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP_2010_39.pdf)>

### Development Tree: The design process of exploring graphical representations



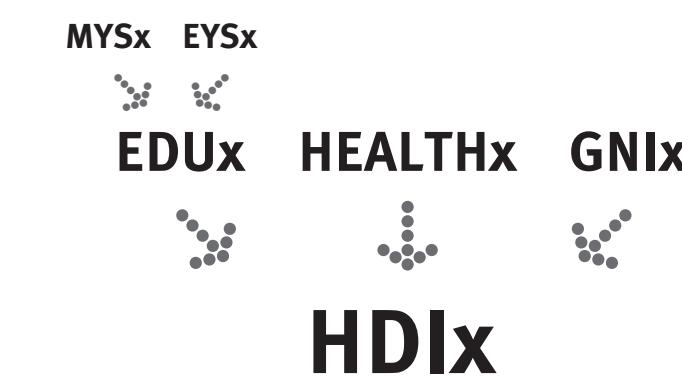
### Mathematical Representation

$$\text{HDIx} = \sqrt[3]{\text{EDUx} \cdot \text{HEALTHx} \cdot \text{GNIx}}$$

$$\text{EDUx} = \frac{\text{MYSx} \cdot \text{EYSx} - \min(\text{MYSx}, \text{EYSx})}{\max(\text{MYSx}, \text{EYSx}) - \min(\text{MYSx}, \text{EYSx})}$$

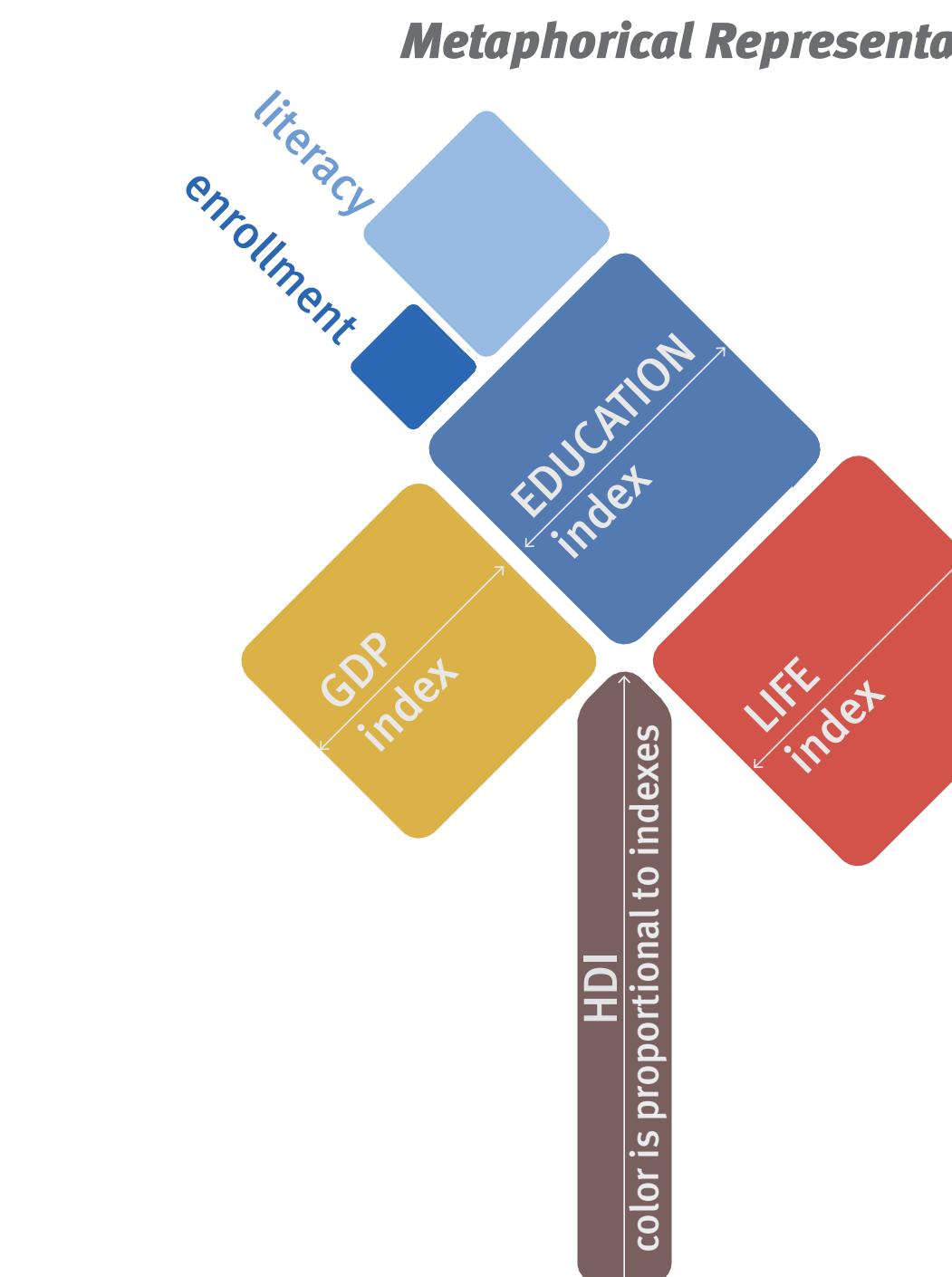
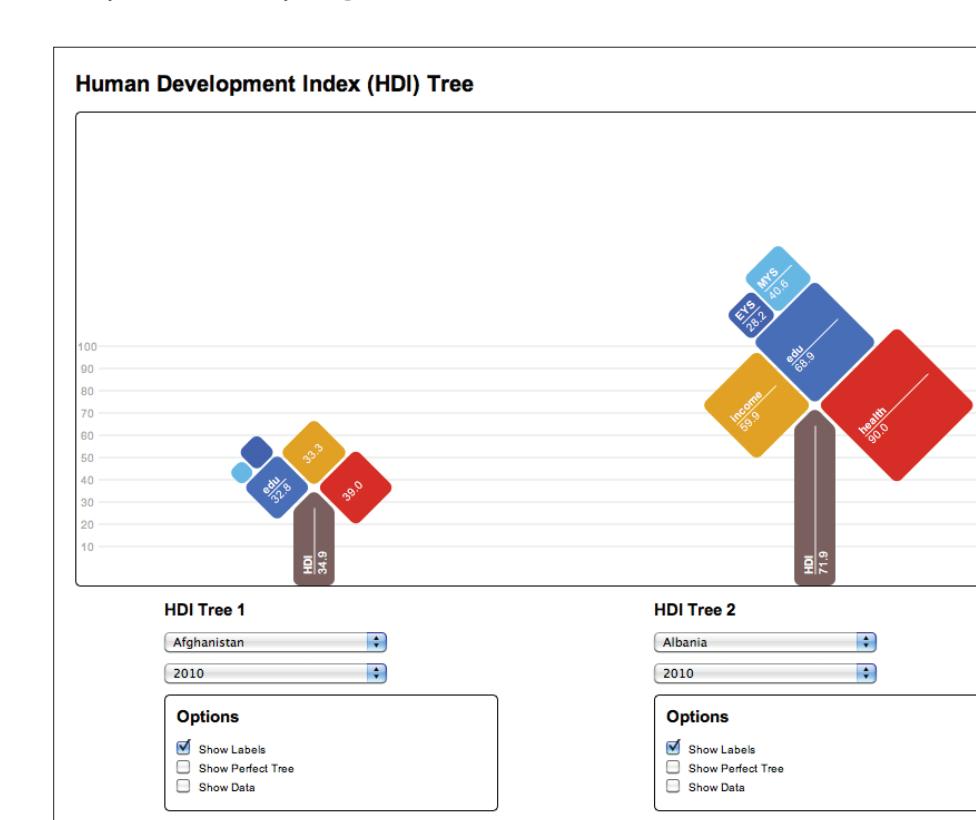
HDIx: Human Development Index  
EDUx: Education Index  
GNIx: Income Index  
HEALTHx: Health Index  
MYSx: Mean Years of Schooling Index  
EYSx: Expected Years of Schooling Index

### Diagrammatic Representation



### Interactive Applet

Interactive applet at the UNDP site developed by Hidalgo and Simoes: <http://hdr.undp.org/en/humandev/lets-talk-hd/>



### Africa: 1970–2005

Telling the story of 35 countries in Africa by comparing indices

