

The Humanitarian Engineering Perspective on Research Translation

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COLORADO SCHOOL OF MINES
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What is Humanitarian Engineering?

- **Signature educational program** at the Colorado School of Mines
 - Started in 2003
 - Possibly first curricular program in the US with this name
 - Minors, degree focuses, and an MS degree

Mission: Educate engineers and scientists to **work as partners with communities** seeking to enhance their social, environmental, and economic sustainability

- **Different way of thinking** about and doing engineering: A way that harnesses the collective power of engineering and social science ...

Teaching engineers to bring a true **sociotechnical approach** to make a difference in the world through their professional careers, whether in community development or corporate settings

Social Concepts in Humanitarian Engineering

- **Understanding structural conditions and power differentials** among specific stakeholders of an engineering project
- **Contextually listening to all stakeholders**, especially those who are marginalized, to grasp their needs, desires, and fears surrounding a specific project, decision, etc.
- **Collaboratively identifying opportunities and limitations of creating shared social, environmental, and economic value** for all stakeholders, especially those who are marginalized
- **Adapting engineering decision-making to promote those shared values**, acknowledging situations in which this is not possible and engineering projects should not move forward
- **Collaboratively assessing activities and outcomes** with those stakeholders



Engineering students enacting SRE criteria in community engagement workshops

HE in Action Example

Maddie Urquhard

MS HE Captstone Practicum Project,

Contextualizing Collaboration: Amplifying a values approach to combat inequities of water management through projects between engineers and Indigenous communities

Figure to Right: How to apply those social science concepts in a particular setting

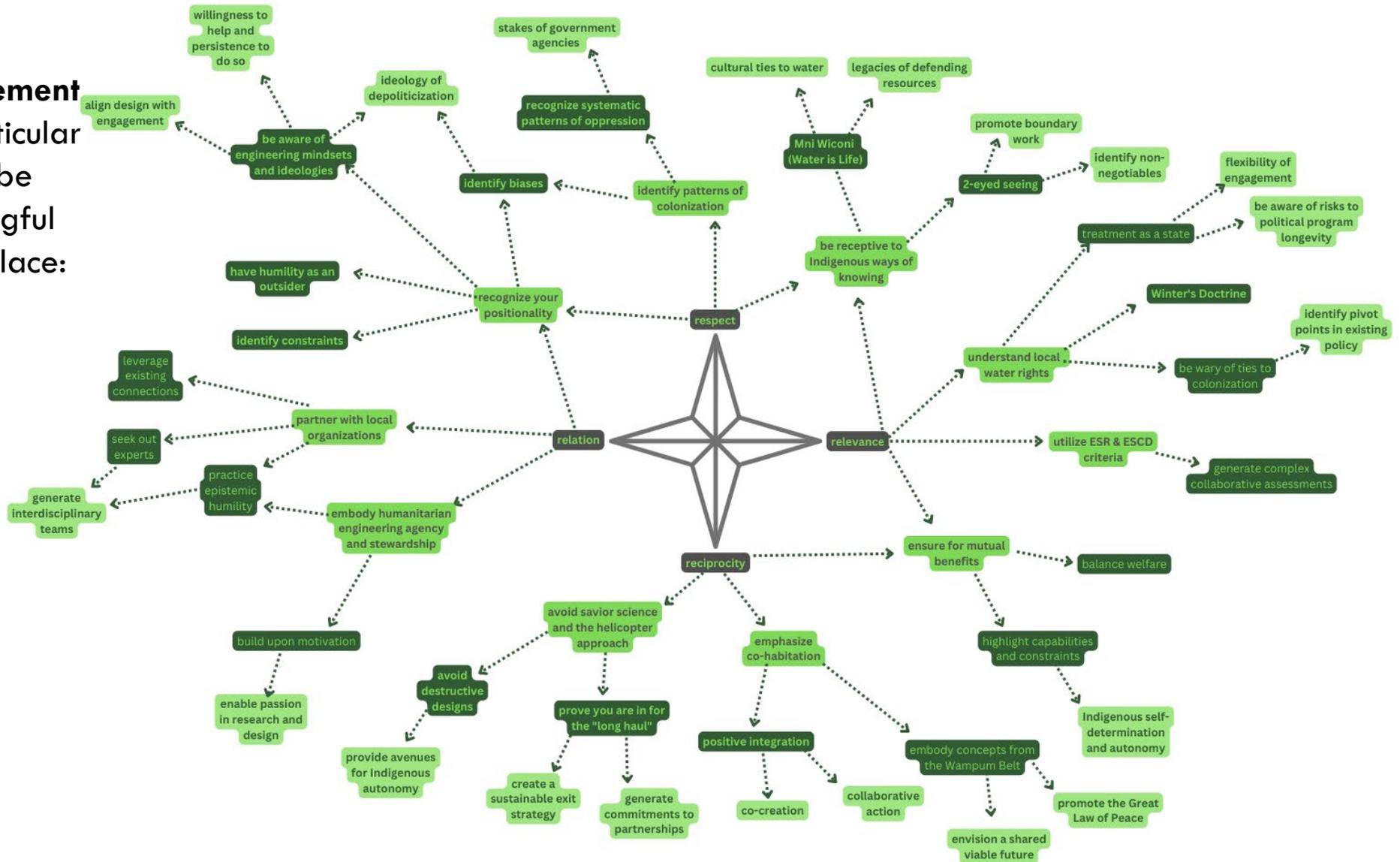
Figure on Next Slide: Meeting a community where they and their values are at



HE in Action Example (cont.)

Principles of Engagement important to this particular community that must be met before a meaningful exchange can take place:

- **Respect**
- **Relevance**
- **Relation**
- **Reciprocity**



R&D/Research Translation Must be a Co-Creation Activity, with Community

- Successful R&D/research translation requires
 - ▣ Community at the center
 - ▣ Co-creation with the community
 - ▣ Process that honors principles of community development

