

I PRO 325

# Huancavelica, Peru

Problem

Goals

Organization

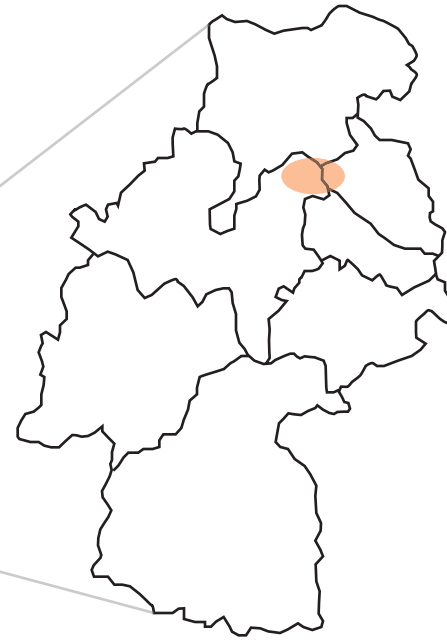
Precedents

Design

Challenges

Semester Plan

Obstacles



# Locale Concerns

## Climate

Oceanic currents create very unstable conditions.

## Health

Poisoning from the wood burning stoves is common.

## Poverty

Over 80% of Huancavelica is considered in poverty.

## Economy

Due to El nino as well as the global struggle Peru has suffered greatly.

## Lack of Infrastructure

Rural areas of Peru have little or no electricity, access to clean water, or food.

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# Team Mission

## Heating

Provide heat to promote general health.

## Knowledge

Teach native Peruvians why this is important (manual).

## Cost

Due to extreme poverty low cost and local materials are a must.

## Low Emmissions

Decreasing mortality rate from poisoning.

## Heating Efficiency

Decrease need for fuel to slow deforestation.

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# Team Organization

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Group Leader

William Lange

Design Team

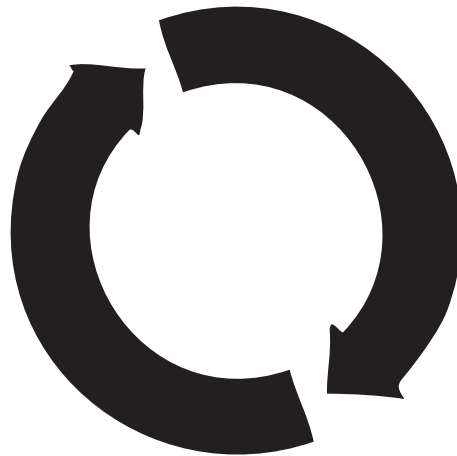
William Lange  
Architecture

Dorothy Collins  
Materials Science and Engineering

Jeffrey Hallenbeck  
Architecture

Young Jung  
Architecture

Nikki Parks  
Chemical Engineering



Research Team

Lindsay Drabek  
Biology

Mark Kimball  
Mechanical/Civil Engineering

Al Maranon  
Mechanical/Aerospace Engineering

Yongjae Park  
Architecture

# Case Study Research

## Ondol

Korean wood burning stove used to heat house.

## Wood Burning Stoves

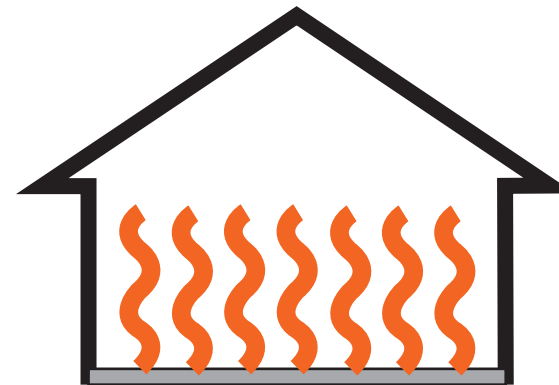
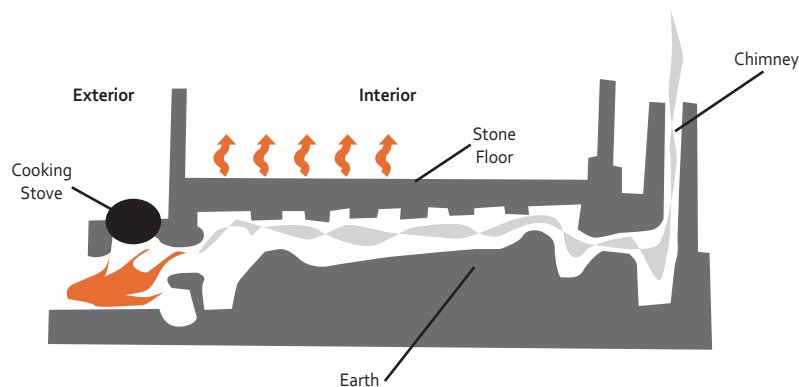
German, Russian, and Chinese designs

## Radiant Heating

Concept of heating an element through water to heat a space.

## Previous IPRO 325 Groups

Structural development, roof design, and some research into heating.



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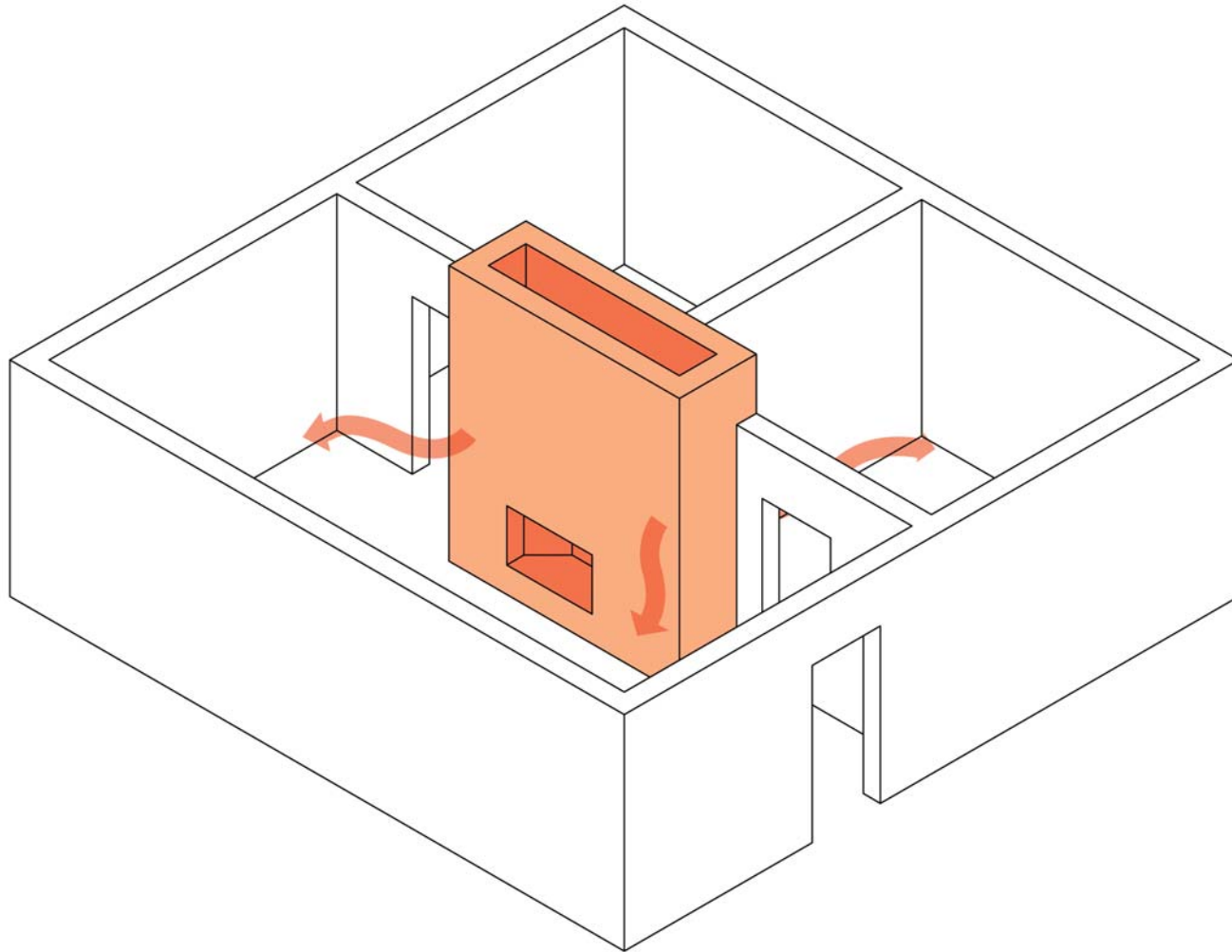
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# Design Concept



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# Challenges so far...

## Team Re-structuring

Two weeks into semester combined subteams into one team.

## Information

Lack of availability of information about region.

## Language

Crossing barriers proves difficult due to dialect or Quechua.

## Contacts

Organizations are not willing to put us in contact with their volunteers.

## Ethical

Bringing new ideas into a foreign country and what that implies.

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# Obstacles to overcome

## Model

Determining exact sizes for members and building a scaled model for testing

## Materials

Acquiring materials that resemble properties to those in Peru

## Contacts

Finding organizations or volunteers with experience.

## Testing

Securing testing facilities as well as equipment.

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Questions?