ORIENTATION

Many fast houses are poorly oriented and do not take full advantage of the sun. They have principal rooms that face the wrong direction or have windows that are improperly sized and placed. This is because the house design is not based on the type or orientation of the lot. In many neighborhoods the same house plan is built on lots that face many different directions. In the northern hemisphere, rooms that face east have morning sun. South facing rooms have sun during the day and in the late afternoon and evening rooms that face west will have direct sunlight. Common sense dictates that the layout of a house should relate to this daily rhythm. Sunlight improves the livability of a room and reduces energy use for artificial lighting.

In a cold climate this solar radiation can also passively heat the interior and further reduce the energy load. This means that the house should usually be oriented so that most windows face east and south. Sunlight into west facing windows should be controlled in the summer. In a hot climate the energy from the sun should be controlled in order to minimize the heat load in the house. In this situation the house should be oriented away from the intense south and west sun. In both climate conditions, the exterior living spaces should be situated to maximize the benefits of sunlight while avoiding overheating.

Orientation

Slow Home: Rules of Thumb

LIVABILITY

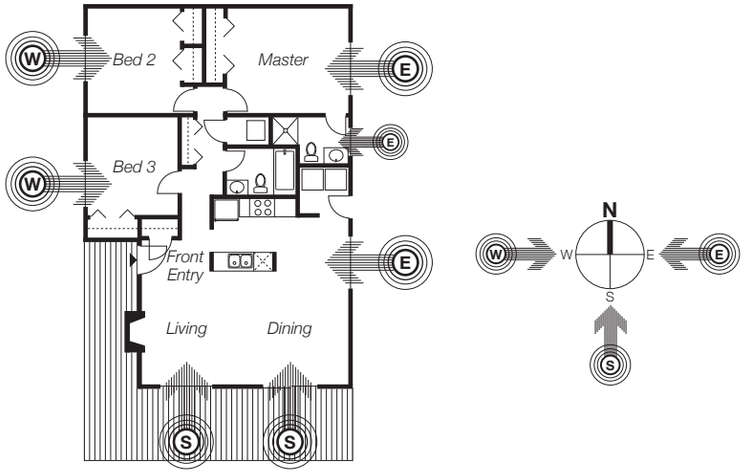
- ☐ In a cold climate, principal interior spaces should have sufficient day-lighting and natural ventilation.
- ☐ In a cold climate, exterior decks and terraces should face south or west and be exposed to sun.
- ☐ In a hot climate, principal interior spaces should have controlled day-lighting and natural ventilation.
- ☐ In a hot climate, exterior decks and terraces should face north or east and be shaded from sun.

ENVIRONMENTAL FOOTPRINT

- ☐ In a cold climate the interior has a maximum exposure to sunlight in winter.
- ☐ In a cold climate, west facing windows are shaded in summer.
- ☐ In a hot climate, the interior has a controlled exposure to sunlight throughout the year.
- ☐ In a hot climate, south and west facing windows are shaded.

Orientation:

UNDERSTANDING THE PATH OF THE SUN



1 **Find the North Arrow**
Always locate the North arrow on a floor plan. It will tell you how the house is oriented to the sun.

2 **Analyze the windows**
Determine at what time of the day sunlight will strike each facade of the house. Consider the size and location of windows to evaluate the level of natural light in each room.

THE IMPACT OF CLIMATE ON ORIENTATION

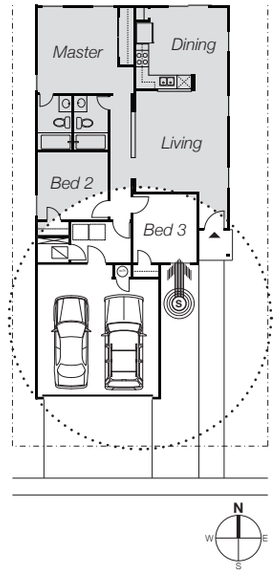
The correct orientation of a house to the path of the sun also depends on climate. Different regions of North America require different responses to daylight in order to appropriately control heat gain while still allowing day-light into the house. In a very cold climate, houses benefit from having a lot of southern exposure to the sun. A moderate amount of western exposure is also good provided that the low summer sunlight can be shaded. Exterior spaces in these regions are best located on the west or southern side of the house. In a warm or hot climate, however, the reverse is true because the goal is to limit the heat gain in a particular space. In this case, southern, and particularly western exposures, should be limited and exterior spaces should either be shaded or located on the east, or even the north, side of the home.

FAST HOUSE COMMON PITFALLS

1 **South facing attached front drive garage in a cold climate**

This house faces south. This means that the front facade receives the most amount of sunlight. However, the front drive garage that takes up almost 70% of this façade severely restricts the amount of south light that will actually enter into the rooms of the house. Notice how there is only one small bedroom window that actually takes advantage of the south facing exposure. This is a house that would be much better located on a north facing lot.

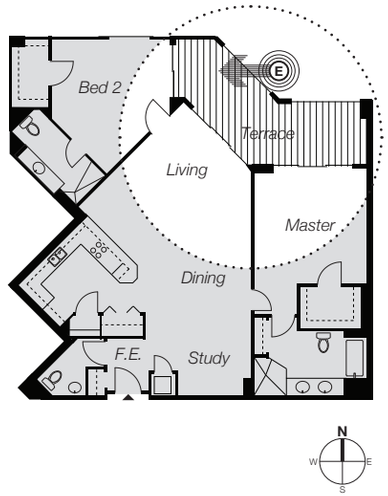
(1580 sq ft townhouse with double attach. garage, Michigan)



2 **North facing terrace in cold climate**

The terrace of this apartment is large and well connected to the interior living spaces. However, because it faces north neither the terrace nor the living spaces that look into it will get very much direct sunlight. This is a real problem in a cold climate where the livability of an outdoor space is very dependent on it having lots of natural light. A similar unit located on the opposite side of the building would be much more advantageous.

(1681 sq ft condominium, Illinois)



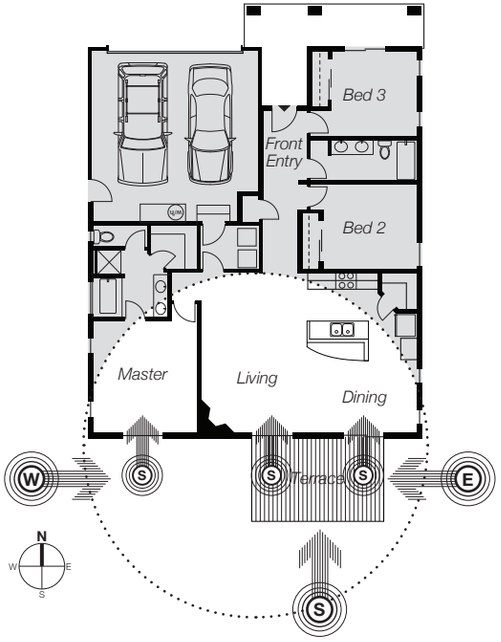
Orientation:

FAST HOUSE COMMON PITFALLS

3 South facing rear yard in hot climate

This principal living spaces in this house face south. The unshaded terrace will be unusable for most of the day. In addition, the large windows of the master bedroom and living room are not protected and will result in significant heat gain. This house would benefit greatly from some trees to block the sun or a different orientation.

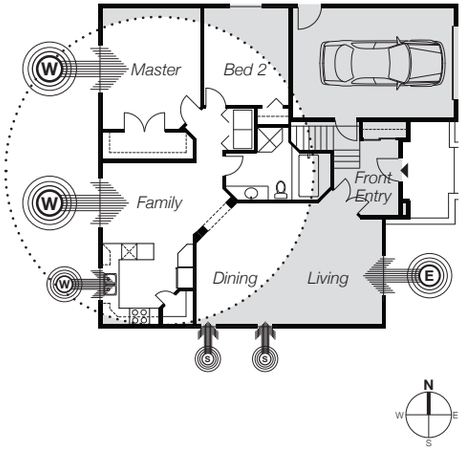
(1835 sq ft single family house, Arizona)



4 Unprotected west facing windows in hot climate

The west facing afternoon sun places a heavy heating load on several of the principal living spaces in this house. At the same time, the living room will get almost no light other than in the morning.

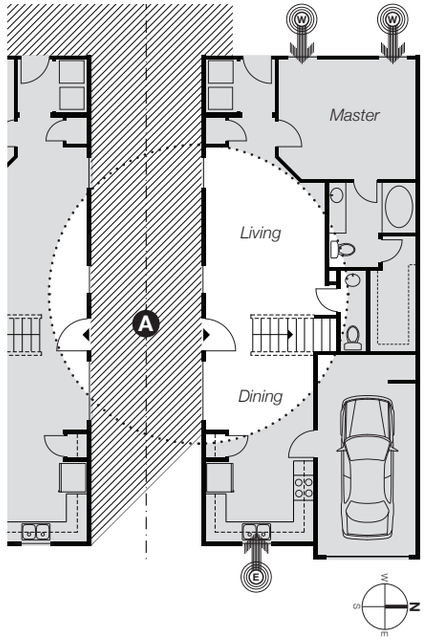
(1685 sq ft single family house, Texas)



5 South facing sideyard

This orientation of this house is poor. The living and dining spaces are organized towards a south facing sideyard. (A) While the south direction is ideal for this cold climate, the dining room and living room will get very little actual light as the neighboring house will block most of the daylighting.

(1942 sq ft single family house, Idaho)



6 West facing multi-family unit in a hot climate

This orientation of this unit is not ideal for a hot climate. The heat load will be high year round as all the windows for this unit face west. The guest room, living room and master bedroom will require the blinds to be closed most of the time, negating any views, light or fresh air.

(1020 sq ft condominium, Nevada)