

The Role of Proportions in Successful Product Design

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ABSTRACT**The Role of the Principle of Proportion in Successful Product Design**

Successful product design inevitably results from the skillful application of the principles of organization, also known as the principles of design. These principles are the key tenants of the designer's practice, and each describes a different facet, or strategy, of how we manipulate raw materials into a unified product - something greater than the sum of its parts.

While no one principle can act alone in determining design success, proportion is considered by most transportation design professionals to be the single most important one in producing excellence in mobility concepts. Throughout the creative process it is critical for transportation designers to employ this principle to develop aesthetically pleasing and functional products, and to communicate concepts and data with clarity and efficiency.

This paper presents a robust insight into why the principle of proportion is so fundamental to this field, why good proportions are considered to be so important, how to identify "bad" proportions, and how to apply this principle to successful design solutions. A historic overview of examples illustrating the application and evolution of the principle in use will be presented to support these topics.

The paper continues with the critical analysis of contemporary proportions, followed by a discussion of experimental applications which will underscore how focused creativity can lead to new and surprising design solutions.

In its conclusion the paper discusses likely future trends of proportion in transportation design and shows numerous examples of advanced mobility concepts generated by students while participating in two PACE Projects within the past two academic years. These collaborative projects challenged mechanical engineering and industrial design students to develop dynamic and futuristic solutions to transportation. The results clearly illustrate that the principle of proportion was essential in generating their innovative design solutions.

Why Proportions?

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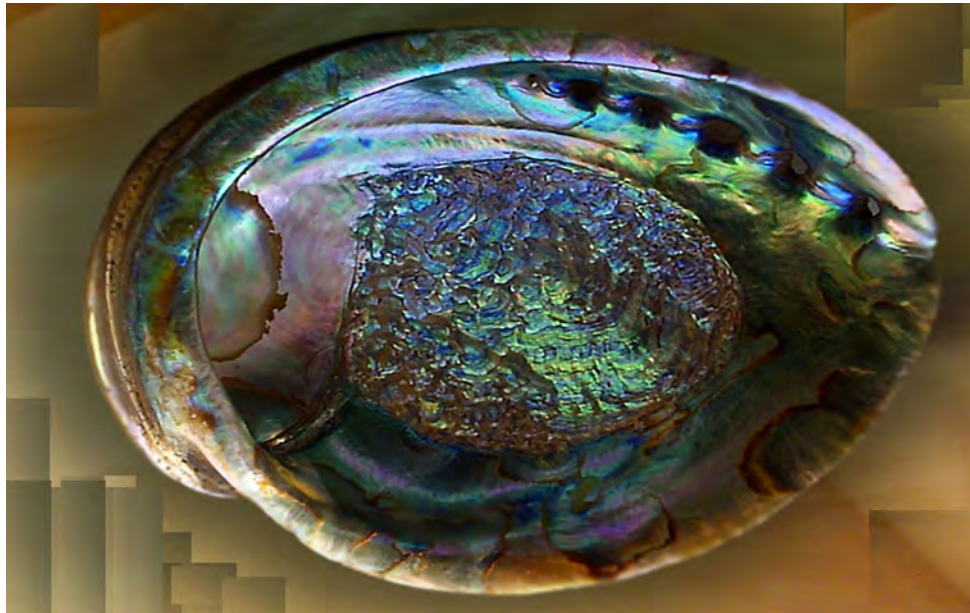
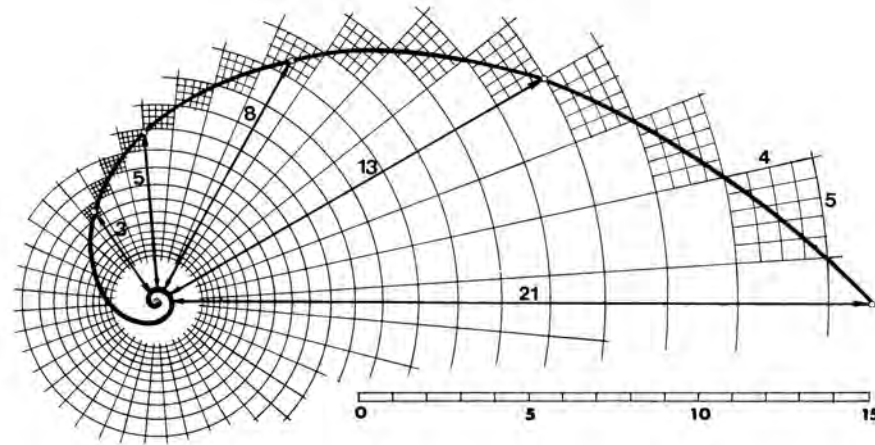
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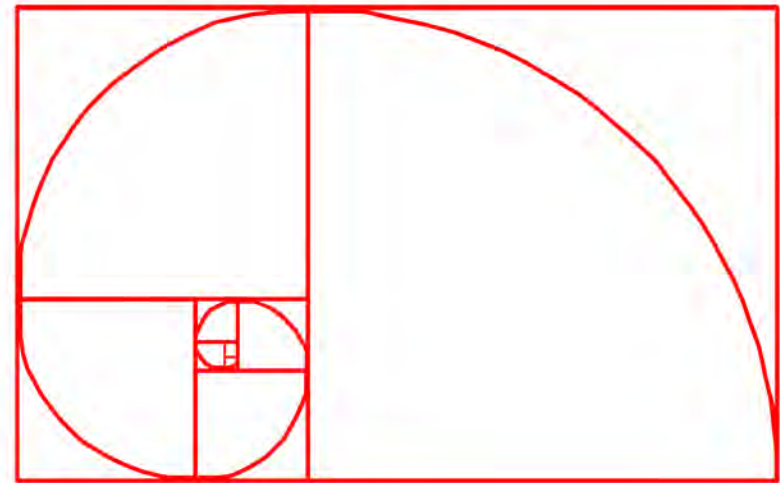
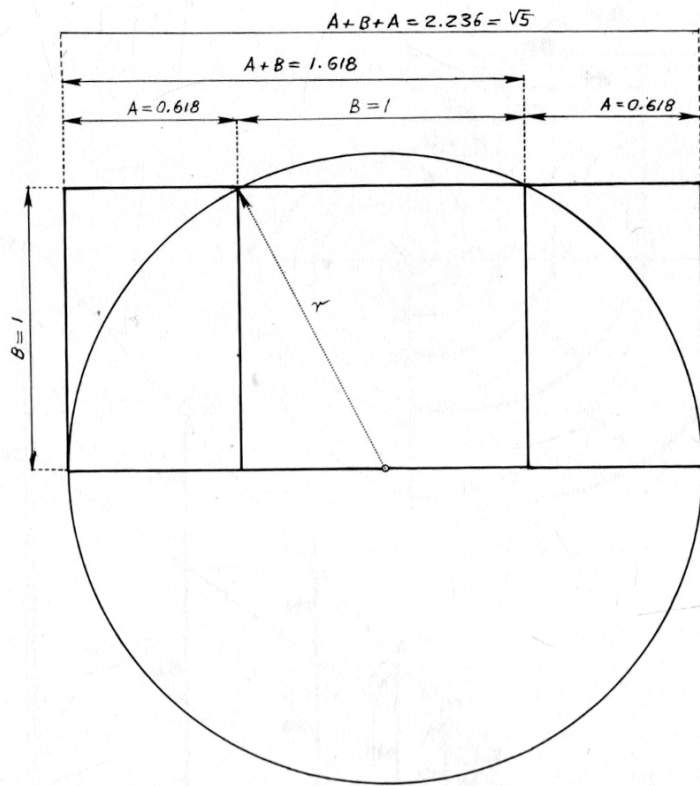
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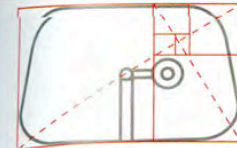
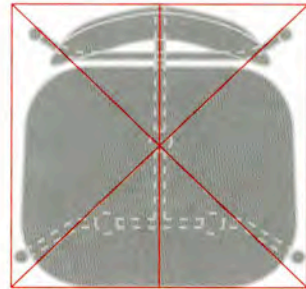
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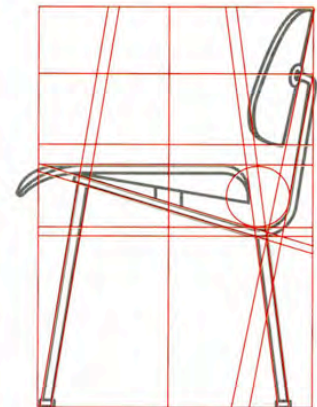
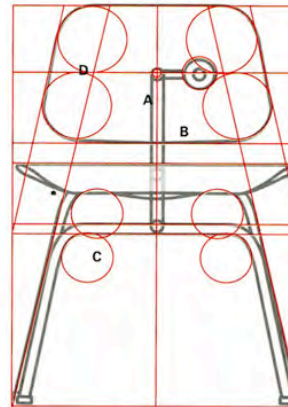
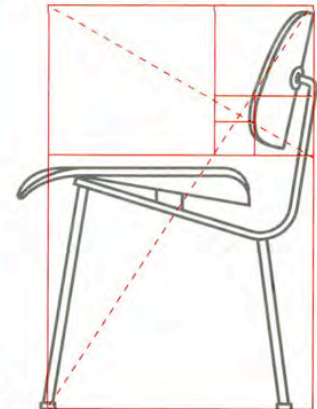
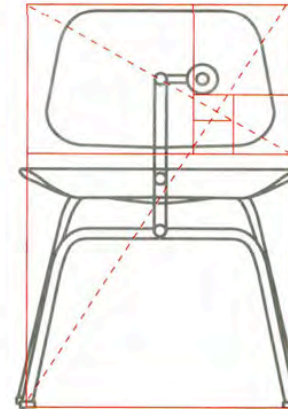


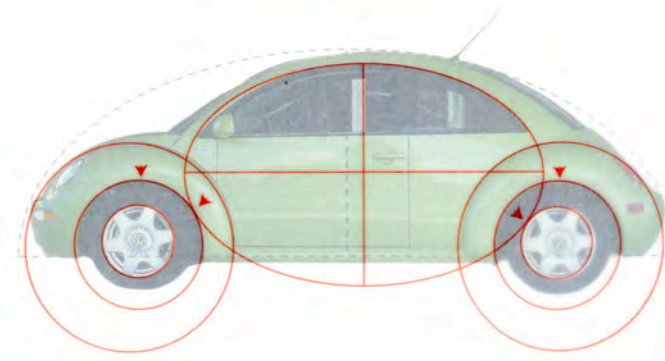
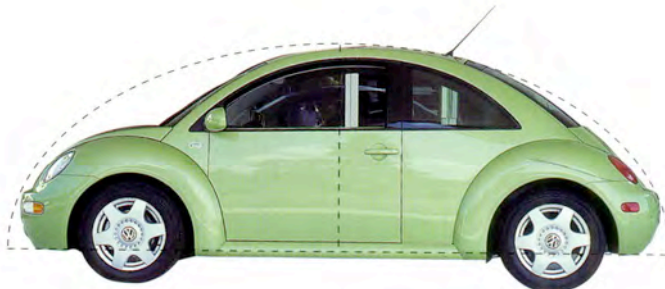
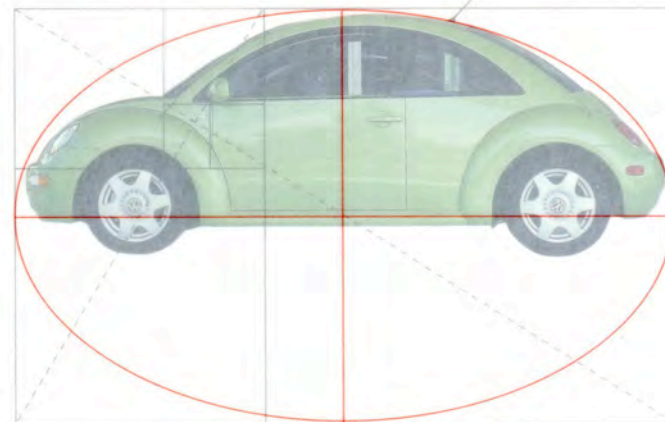
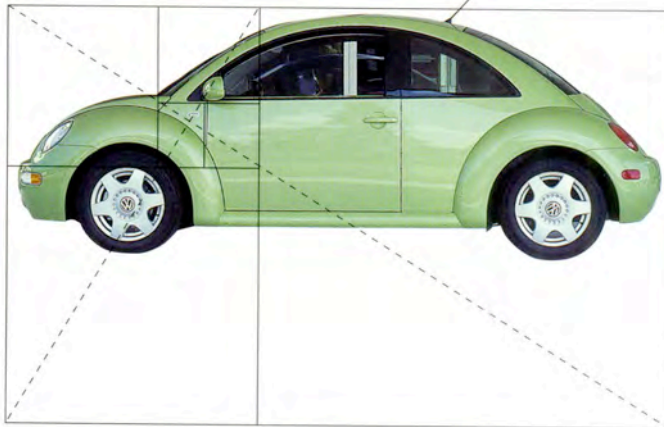
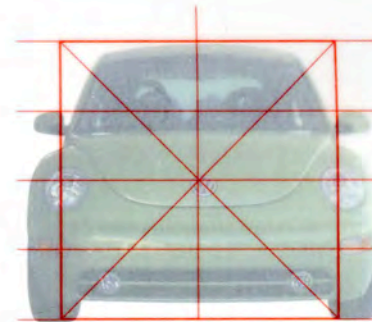
Chair Back (above)
The chair back fits perfectly into a golden section rectangle.

Chair Proportions (right)
The dining chair proportions are roughly those of the golden section.

Chair Detail Proportions
The radii of the corners of the chair back as well as the tubular legs are in proportion to each other 1:4:6:8.

- A= 1
- B= 4
- C= 6
- D= 8





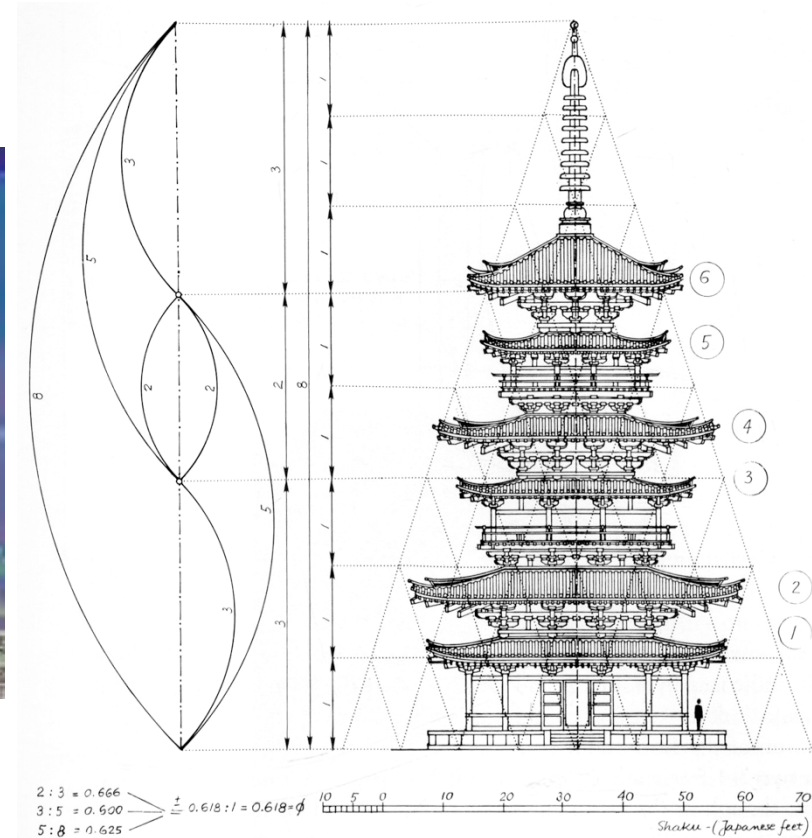
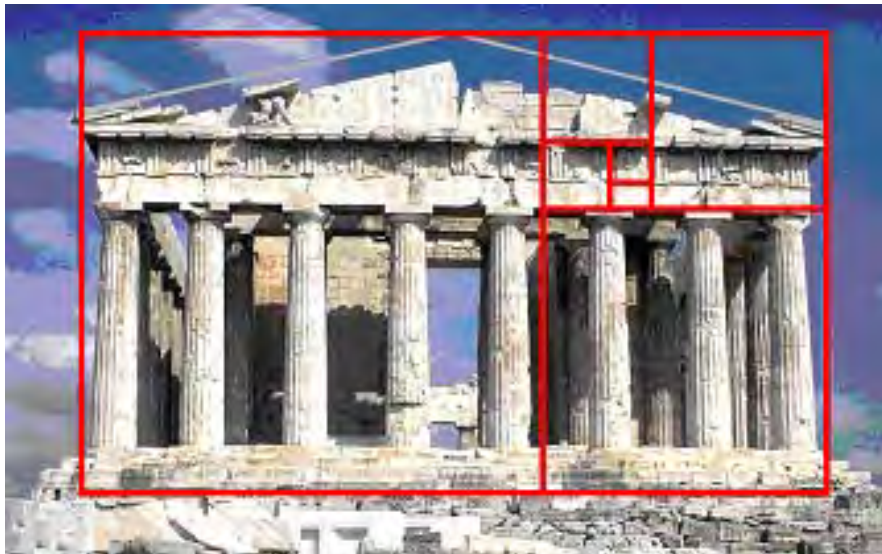
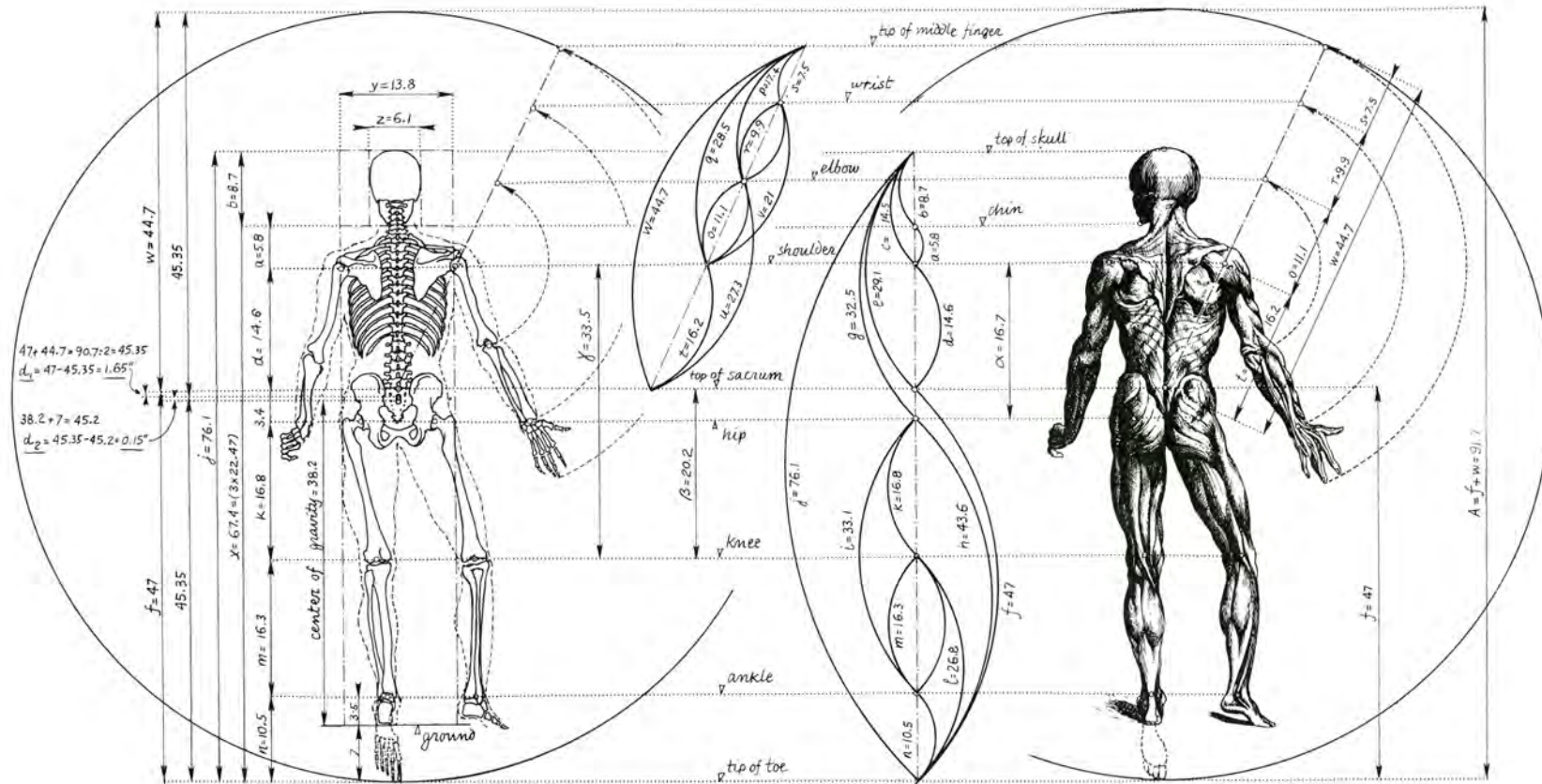
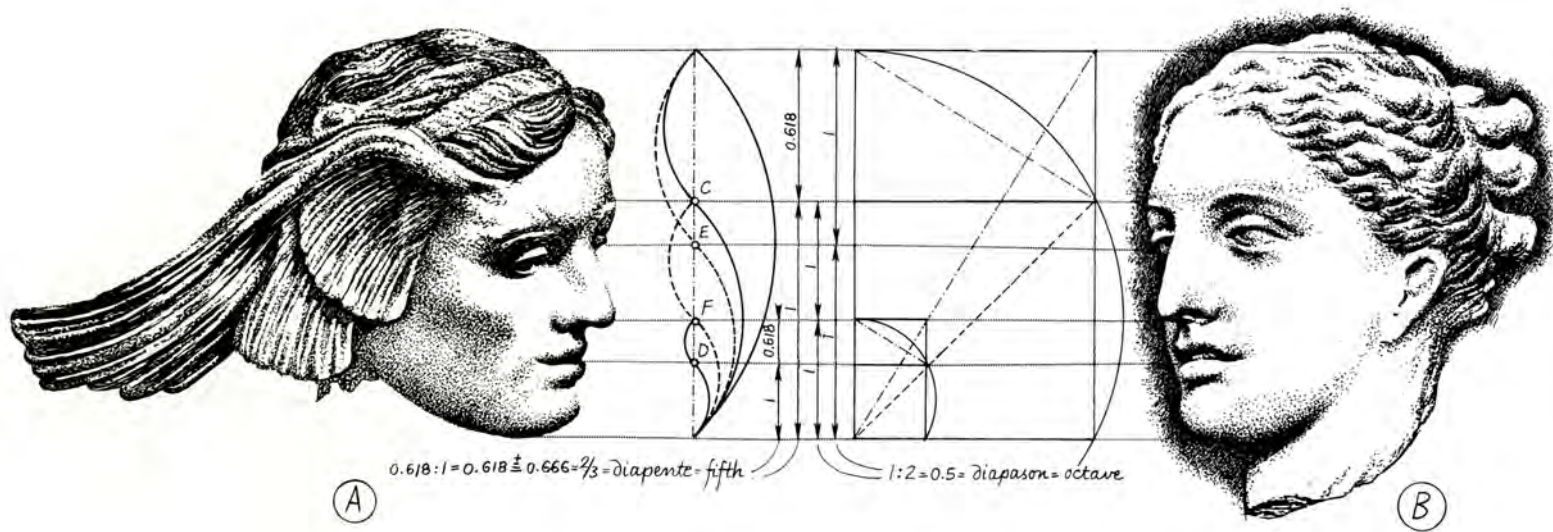


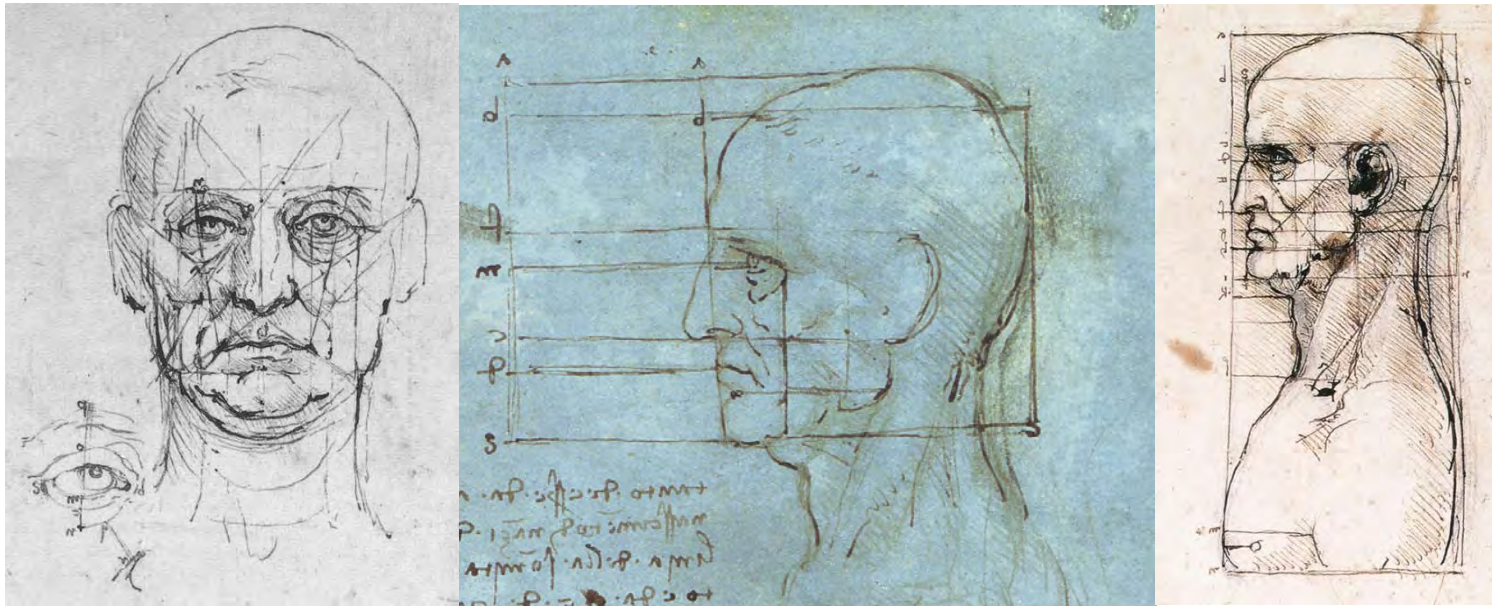
Fig. 162. Pagoda of Yakushiji temple.

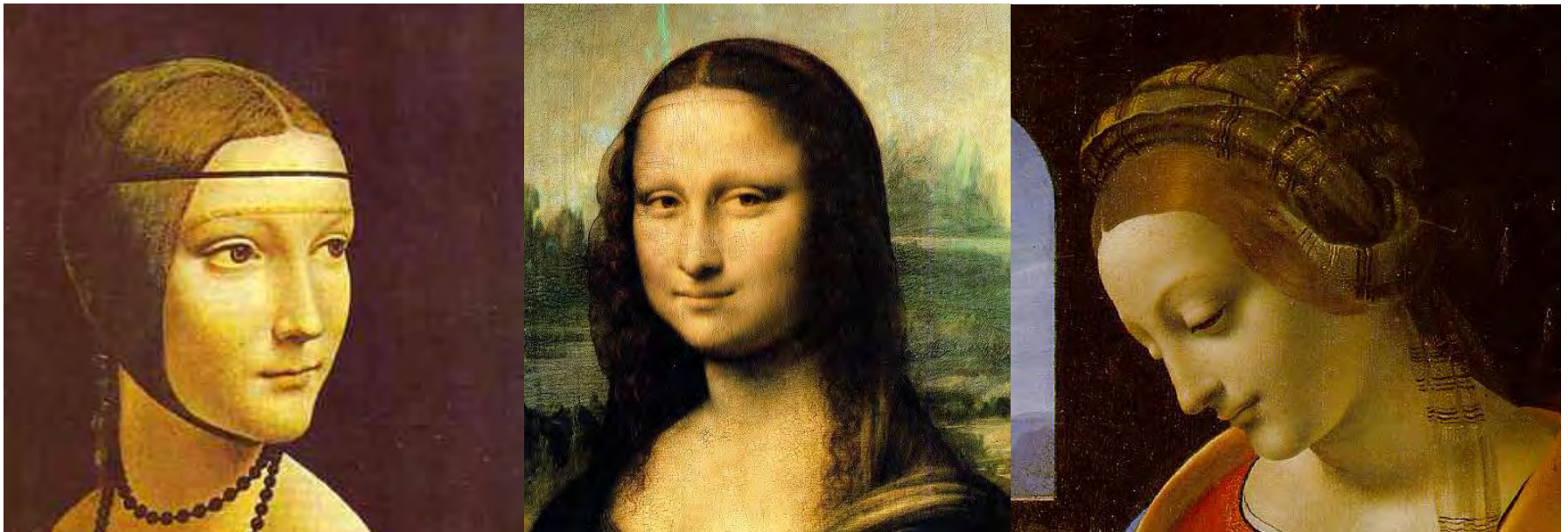












**What happens if the proportions
are off?**



**What happens if the proportions
are off just a little bit?**





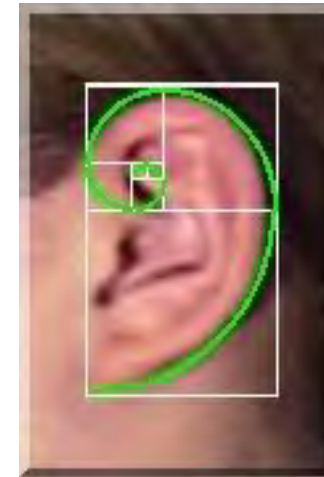
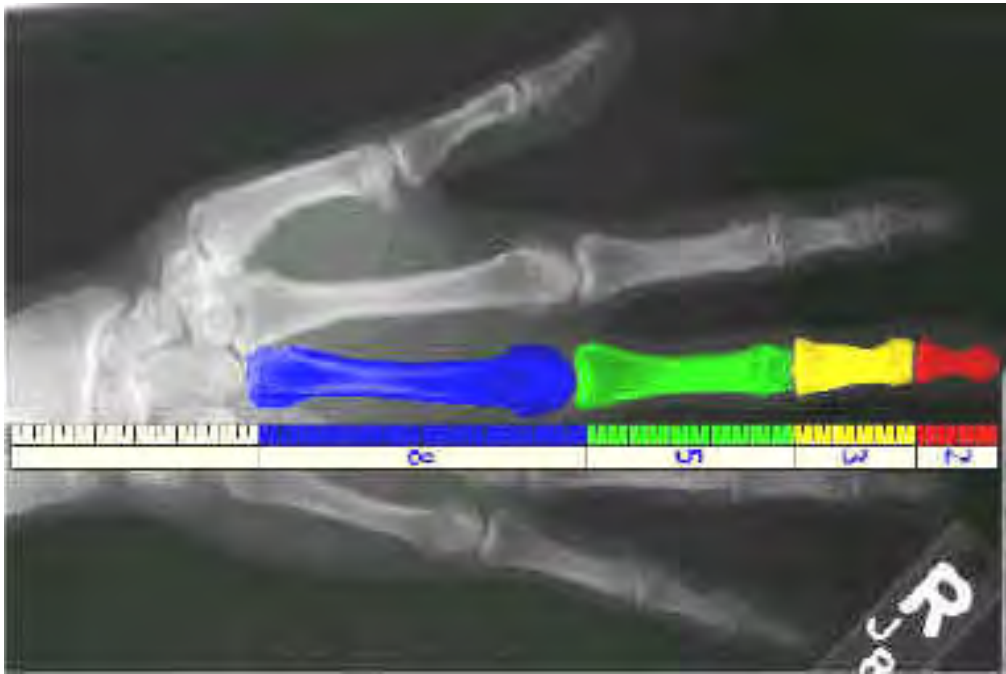
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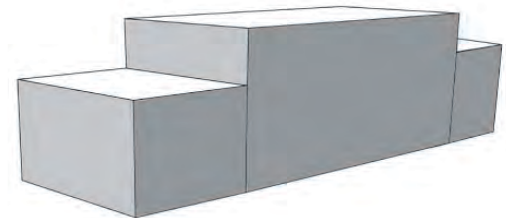
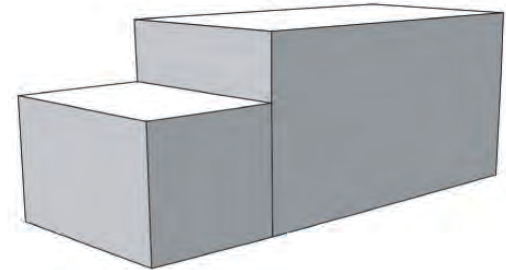


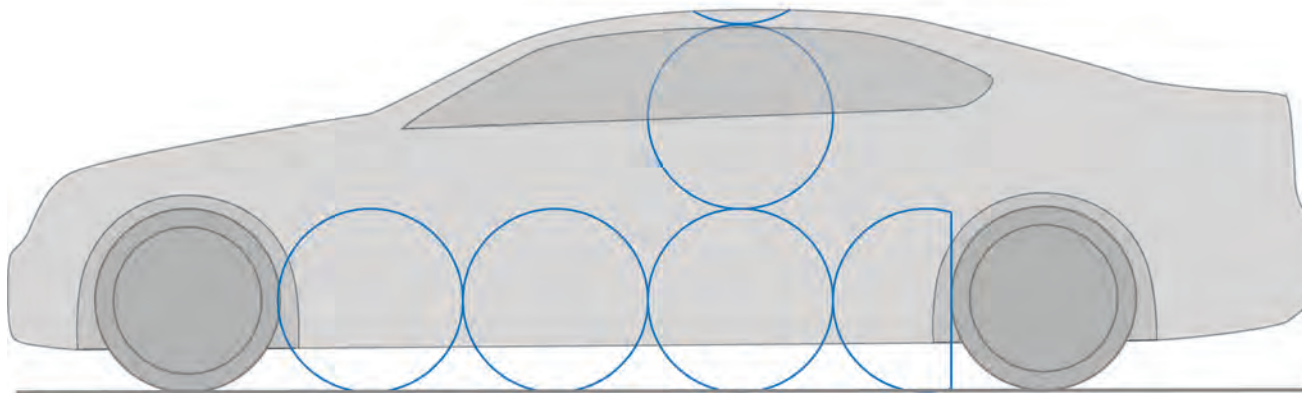




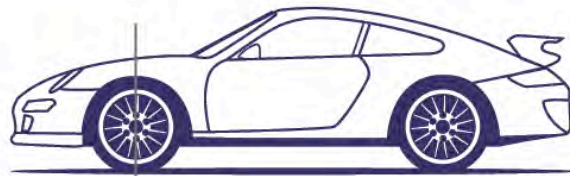




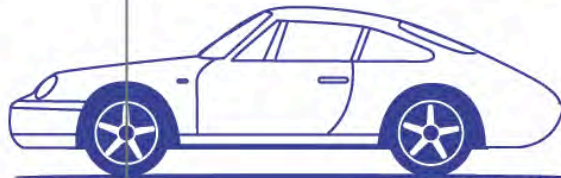
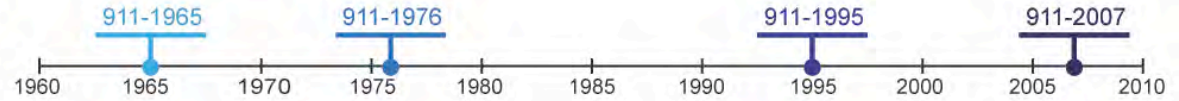




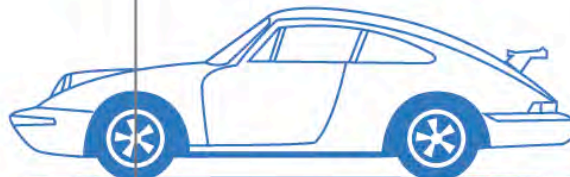




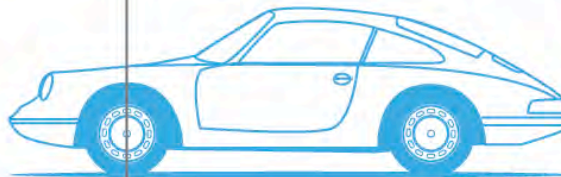
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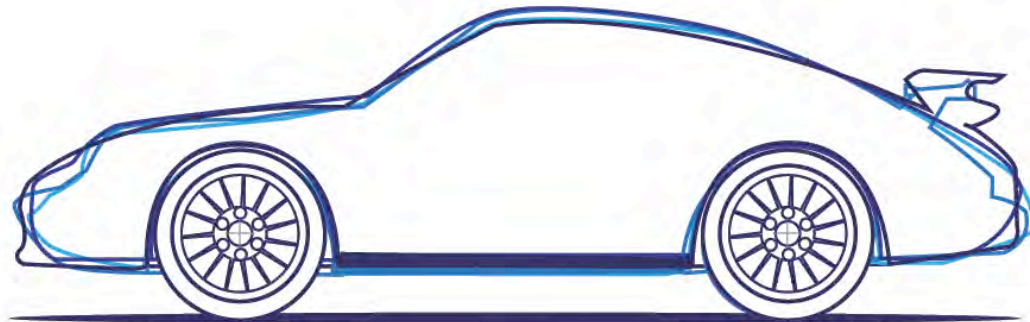
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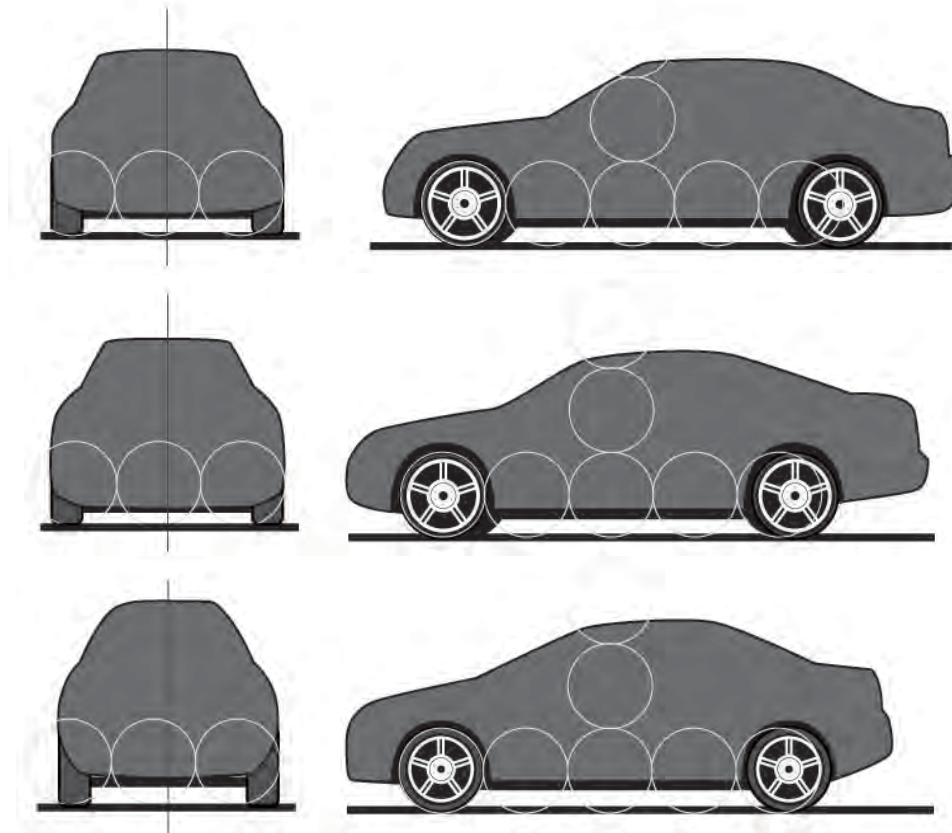
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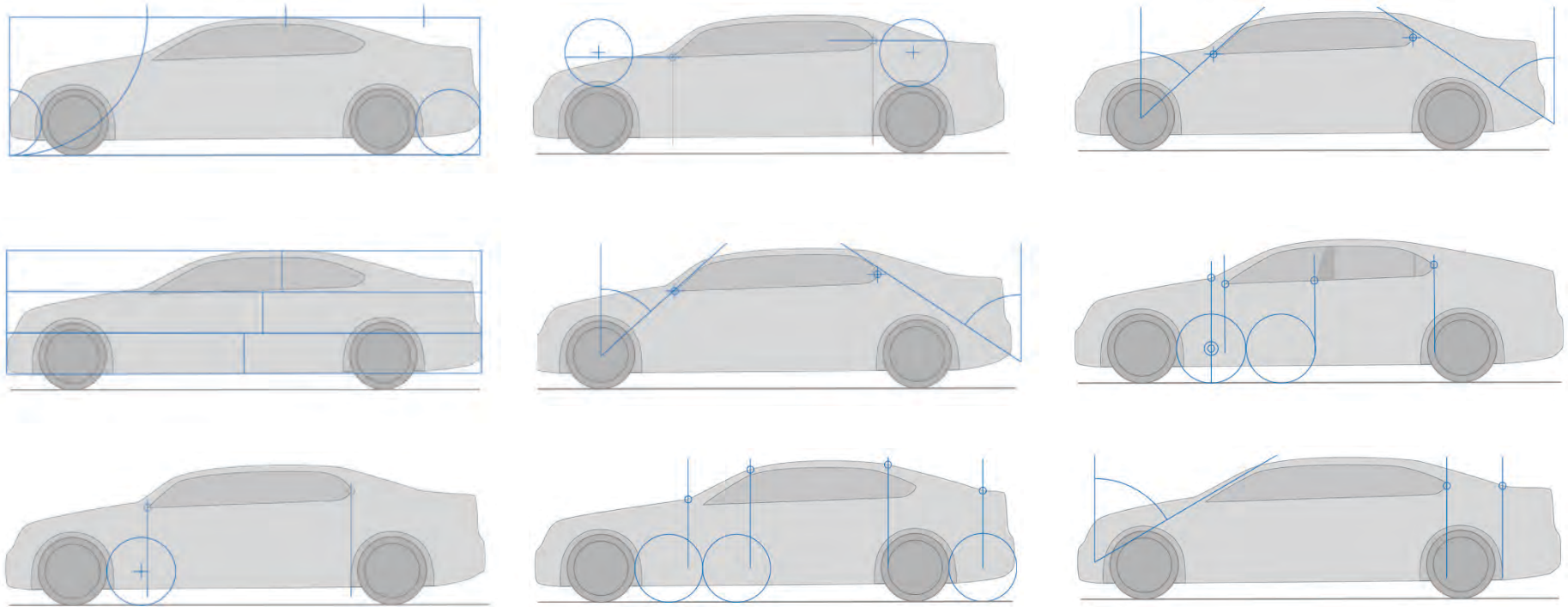
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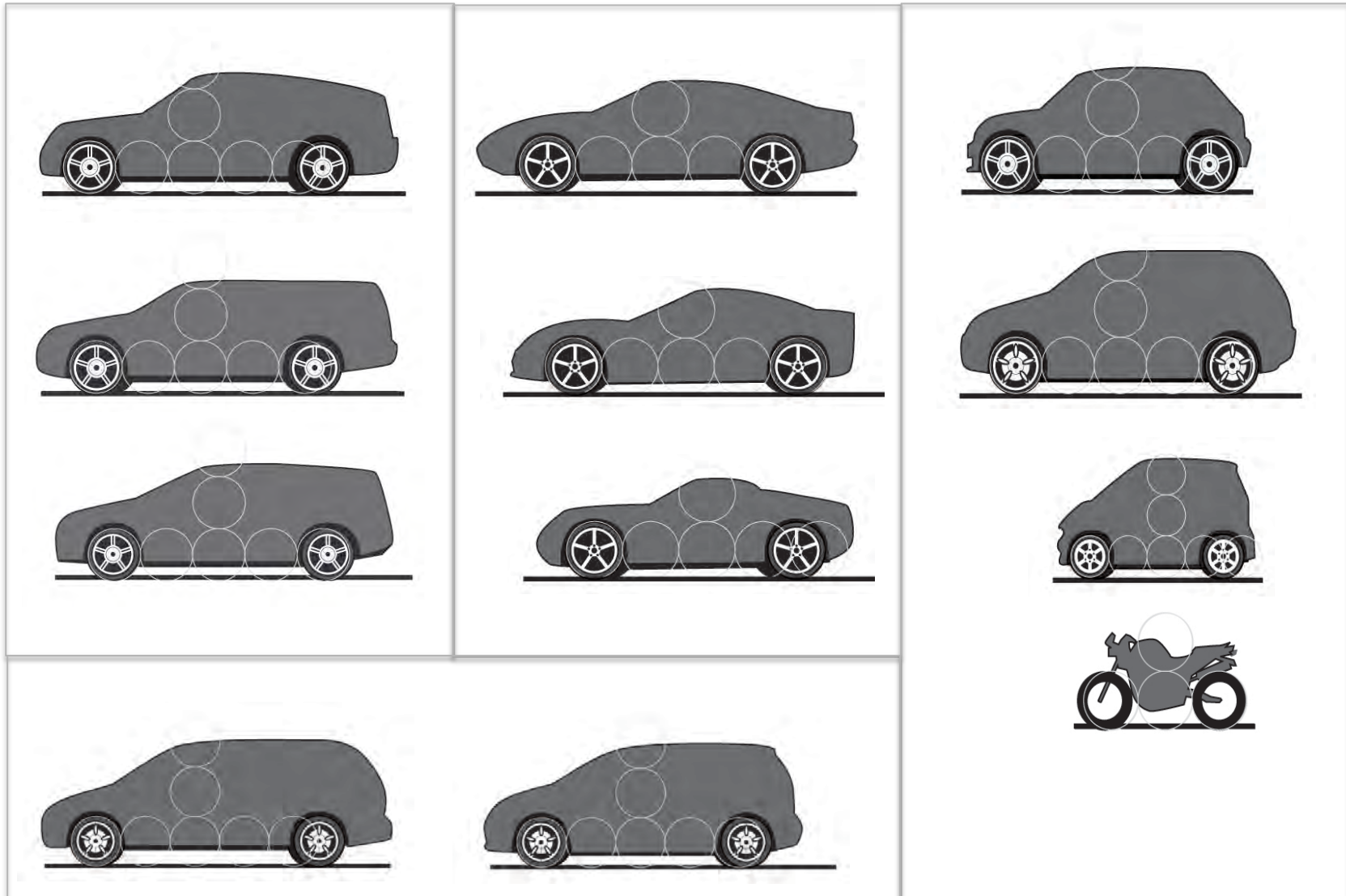


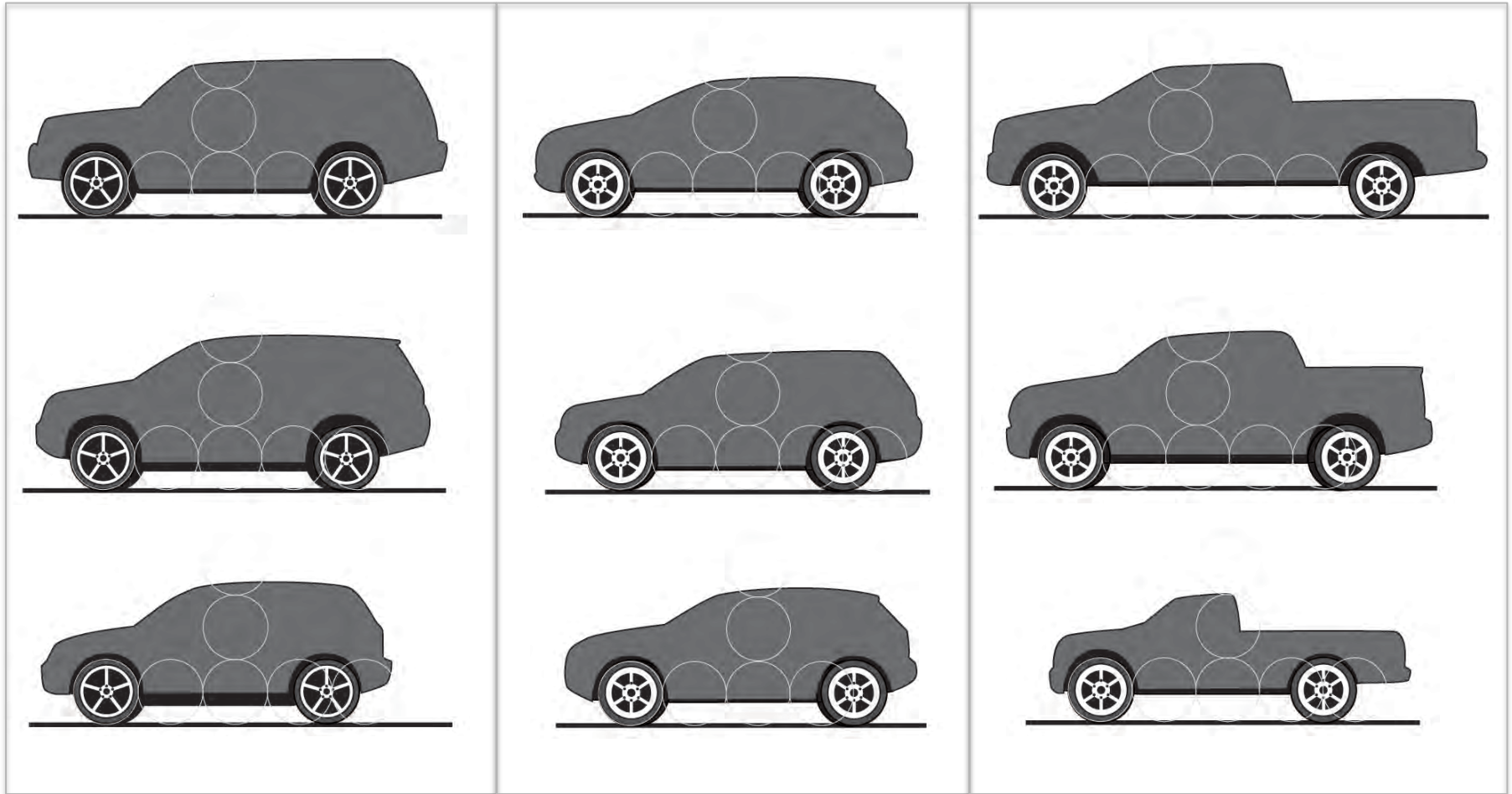
Many Different Proportion



Many Different Rules to Proportion







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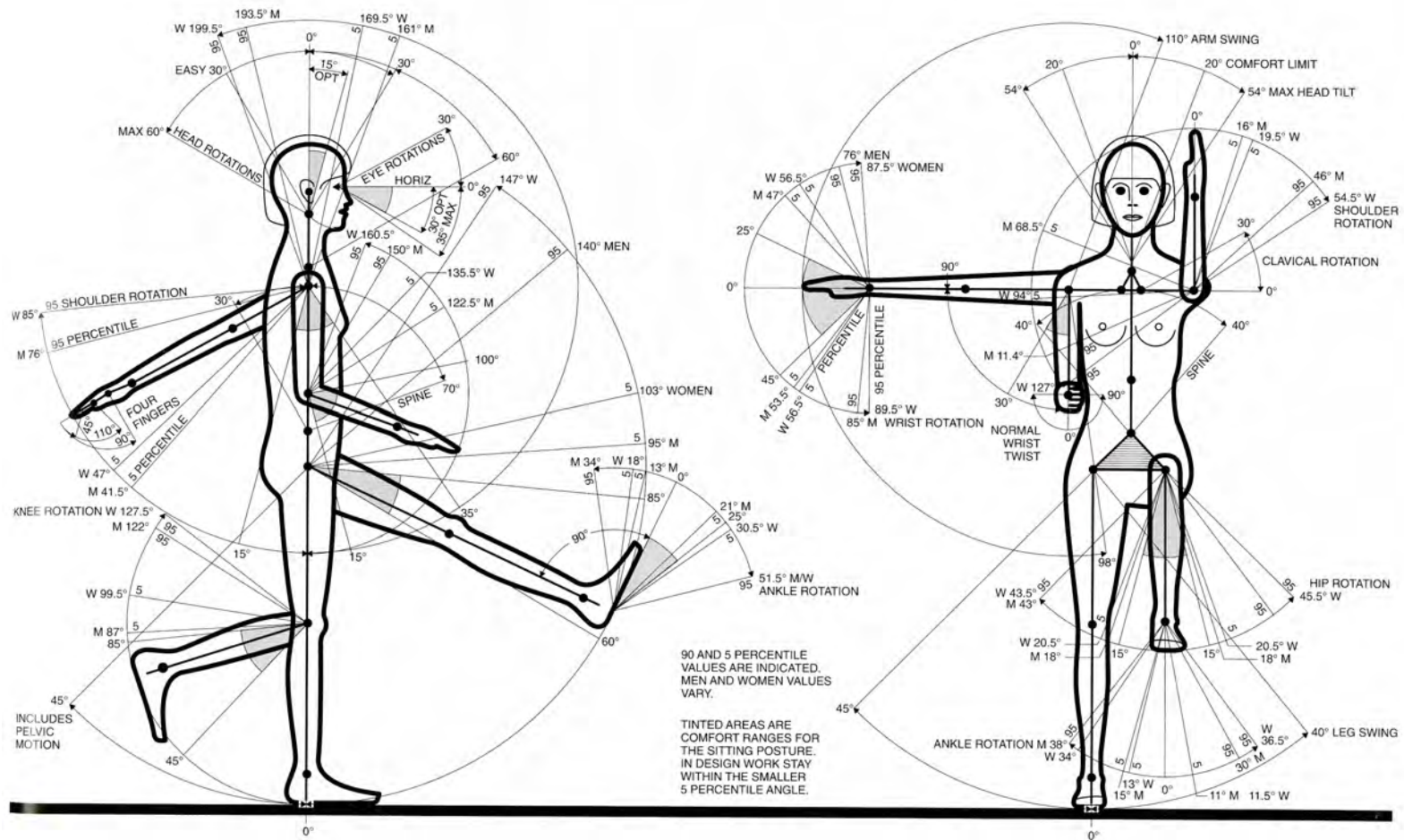
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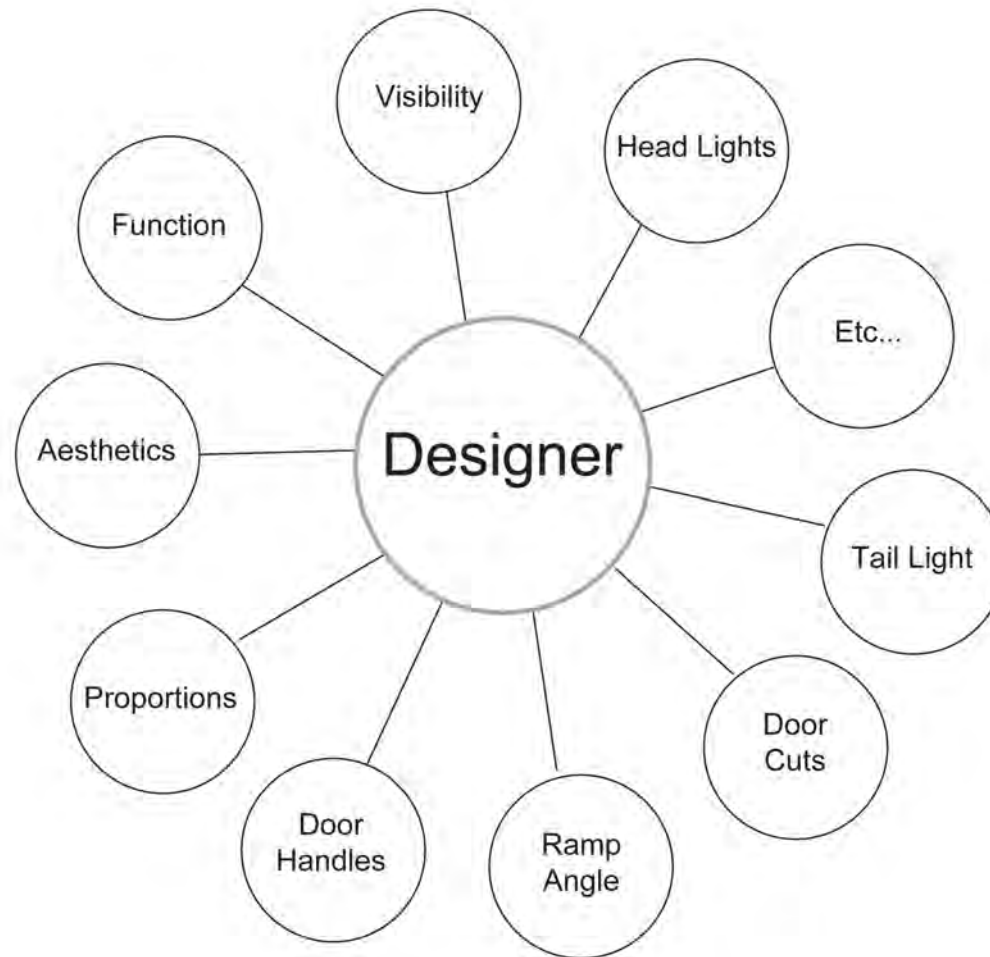
Isolated Systems



Isolated Systems



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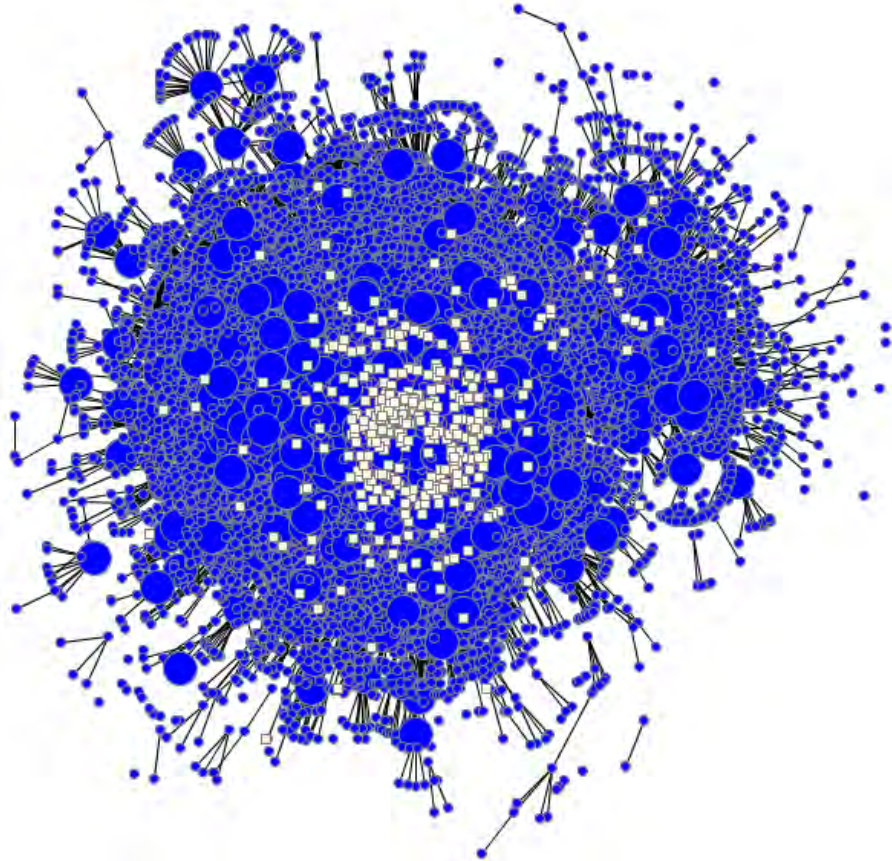
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The Judge Harry Pearson Interchange in Los Angeles

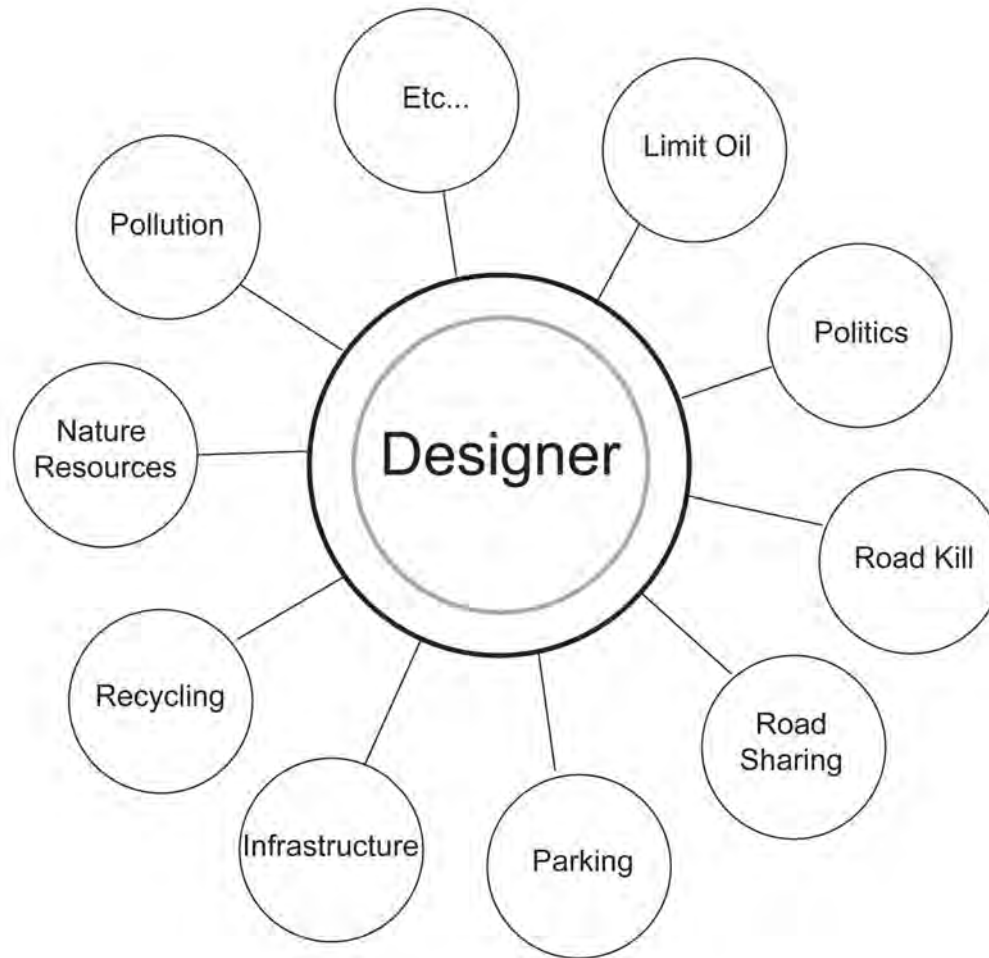


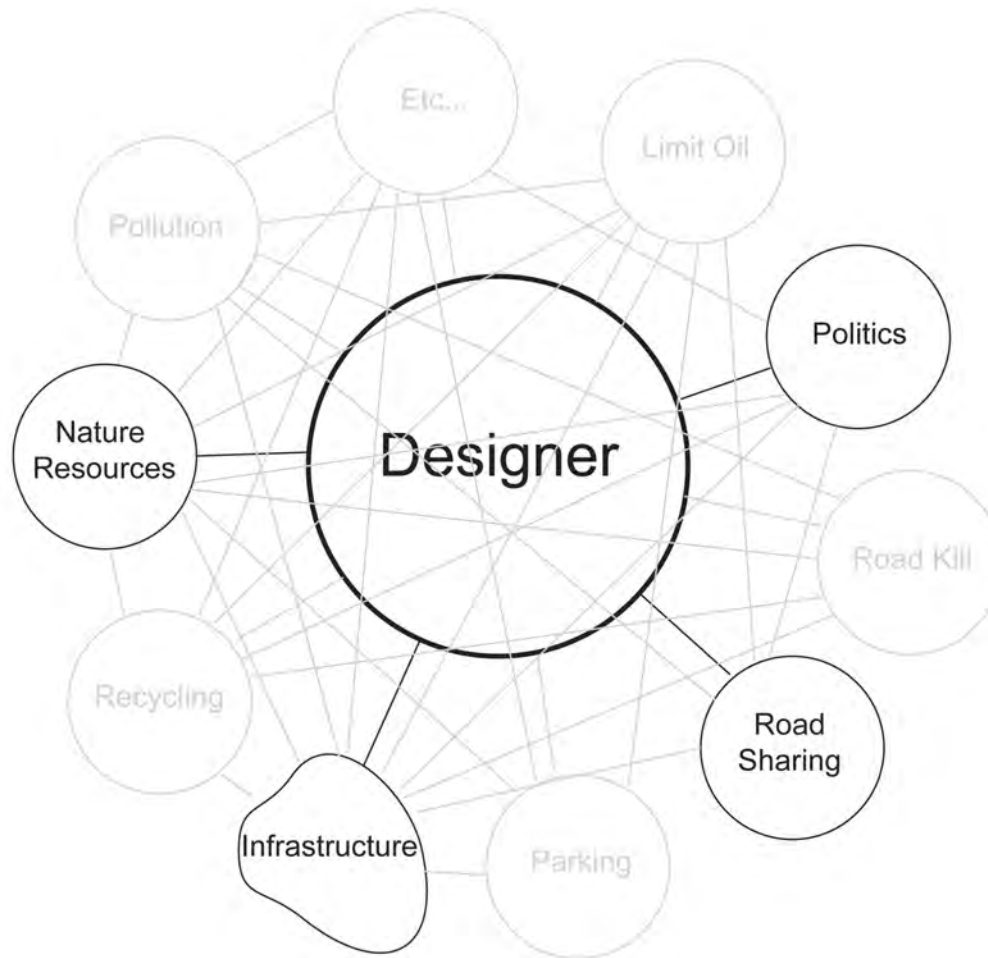
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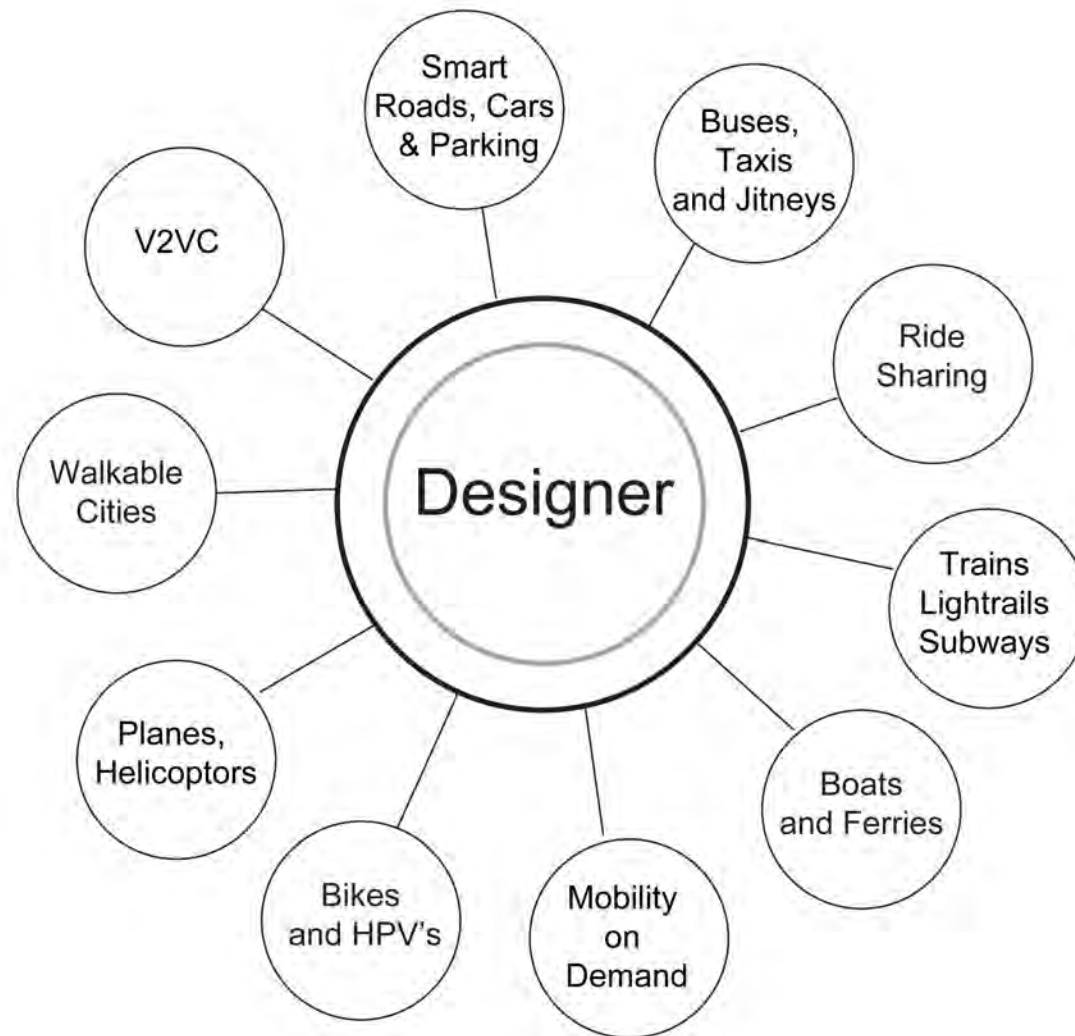
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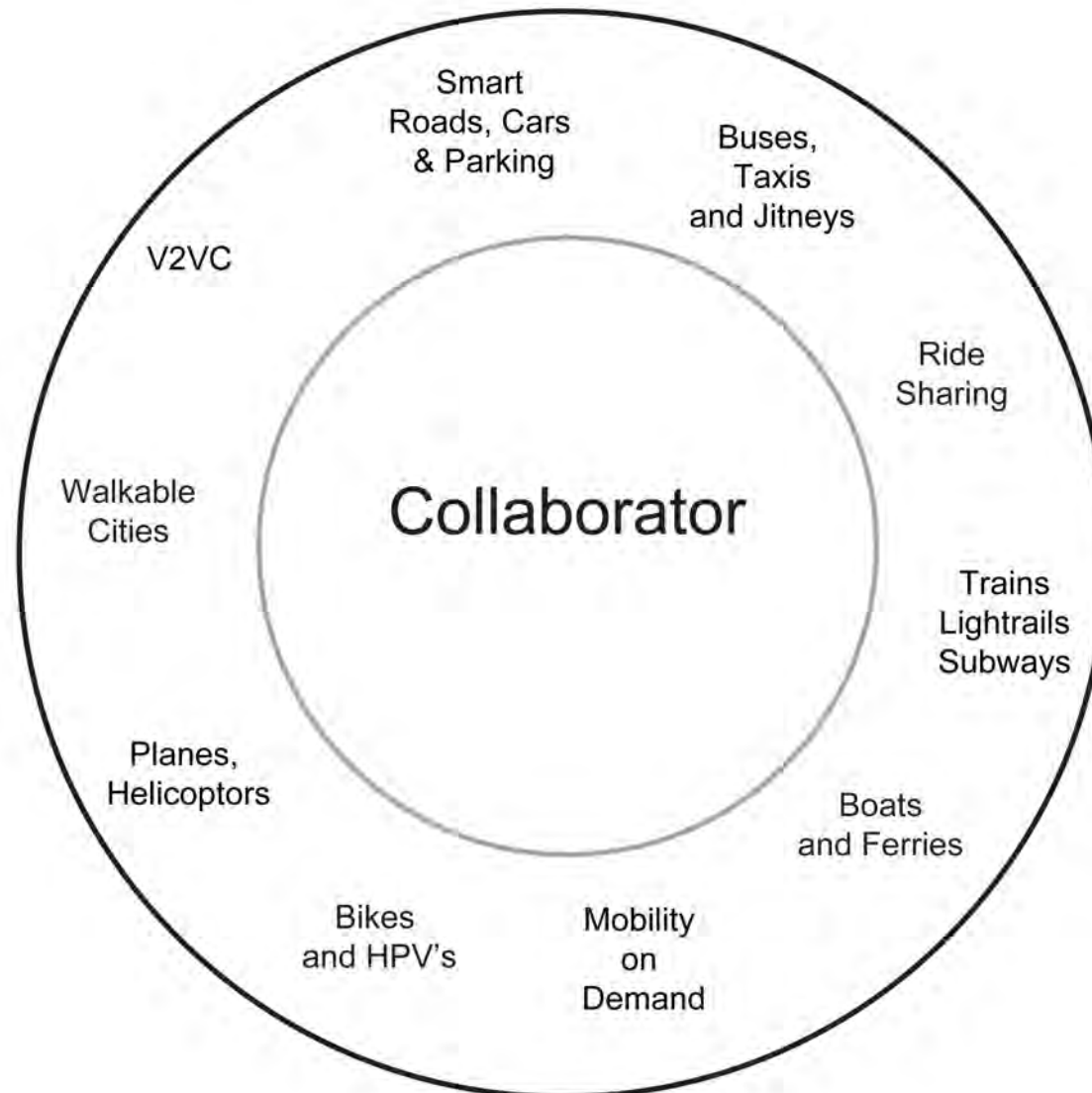


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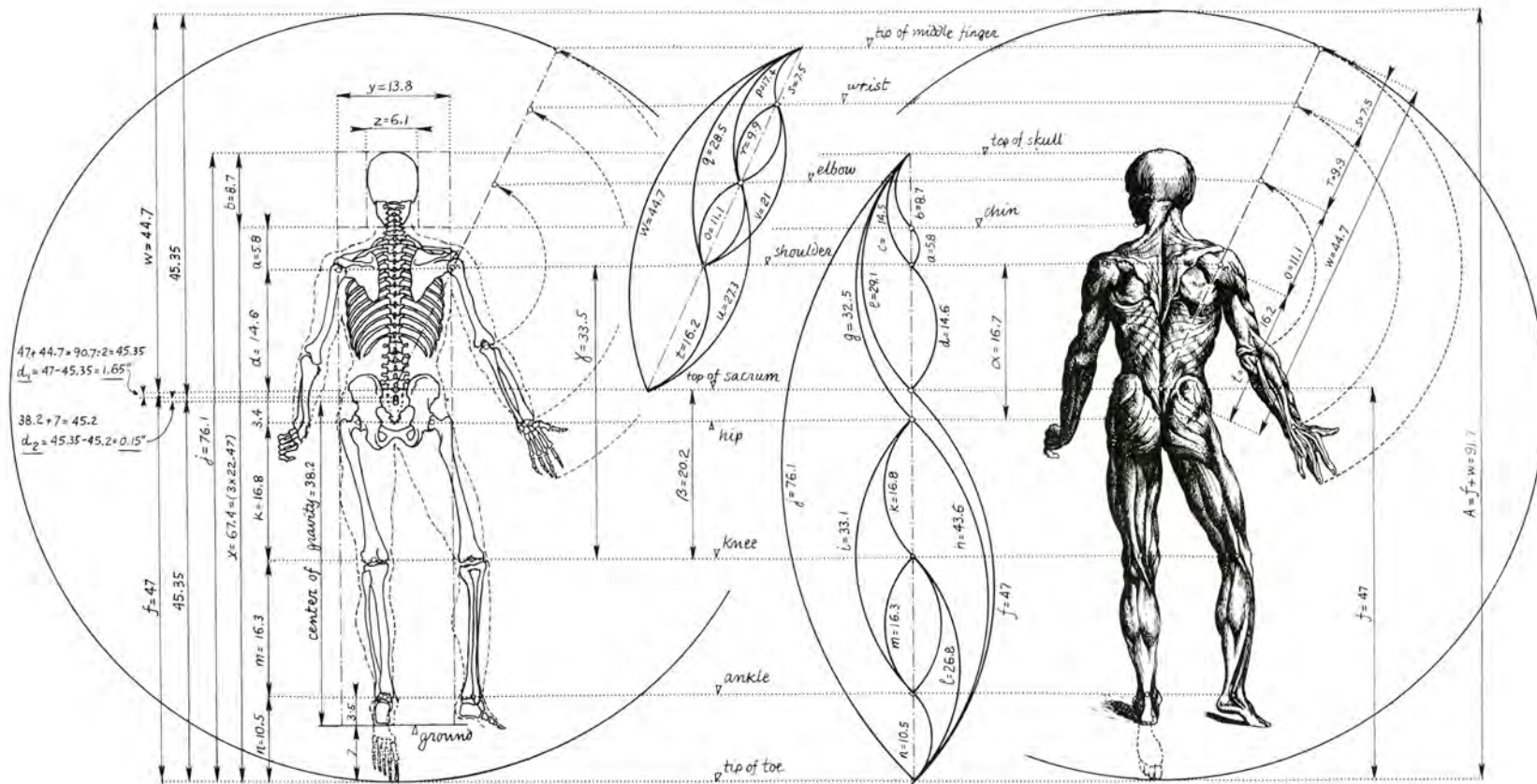








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Student Examples Forthcoming

Thank You

Bibliography

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