ST222 Part III: Descriptive theory

ST222 Games, Decisions & Behaviour, 2016

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Methodology: Normative theory versus descriptive theory

	Normative approaches	Descriptive approaches
Probabilistic judgement Uncertainty, risk	Subjective probability	Perceived probabilities and observed processing (axioms may not hold)
Decision theory Preferences, choices	Expected utility maximisation	Observed choice behaviour
Game theory Strategies, moves	Reward maximisation	Observed moves and motives

Definition: Normative theory

Normative theories of decision making

- How people *should* behave when taking decisions
- Based on an idealised form of human being, specifically, *homo economics (*i.e. rational maximiser of self-interest)
- Inspired by economists' personal perceptions of real humans or on ideology
- Not based on systematic observation of human behaviour
- Methods: Mathematical axioms and optimisation
- Works well or satisfactory in many cases, fails in many others

http://epublications.uef.fi/pub/urn_isbn_978-952-458-985-7/urn_isbn_978-952-458-985-7.pdf

Species: Homo Economicus

Homo economicus

Another term for economic man.

Defintion:

Using rational assessments, homo economicus attempts to maximize utility as a consumer and economic profit as a producer

http://www.oxforddictionaries.com/definition/english/homo-economicus

Species: Homo Economicus

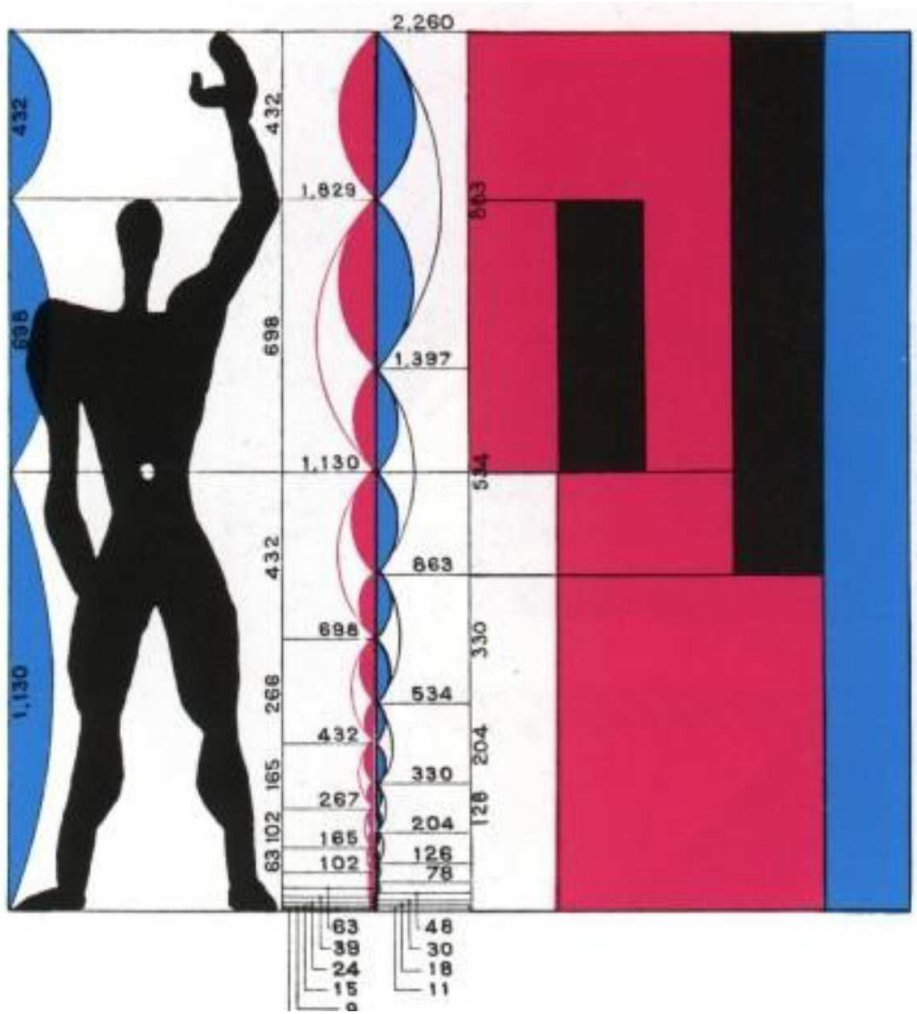
Rational in the sense of…

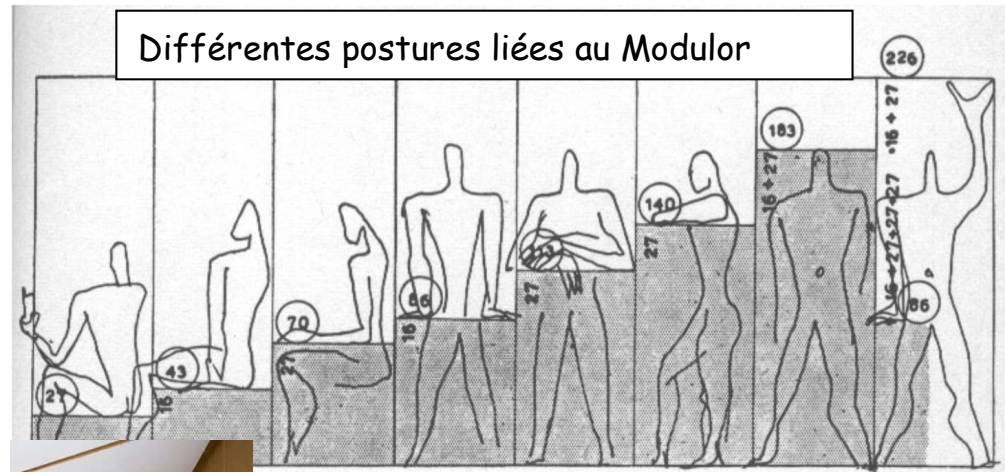
- Maximising some exogenous, stable set of preferences that depend on absolute levels of outcomes
- Ability to include uncertainty (EUT)
- Uses logic and axioms of probability to process information
- Ability to include dynamic situations (discounting)
- Ability to make and follow intertemporal plans (even contingent one) without conflict between preferences of current and future selves
- Has perfect will-power
- Perfectly self-interested

http://econweb.ucsd.edu/~v2crawford/142BehavioralDecisionIntroductionSlides08.pdf

Species: L'homme moyenne

L'homme moyen and *Le Modulor* by Le Corbusier (1887-1965)





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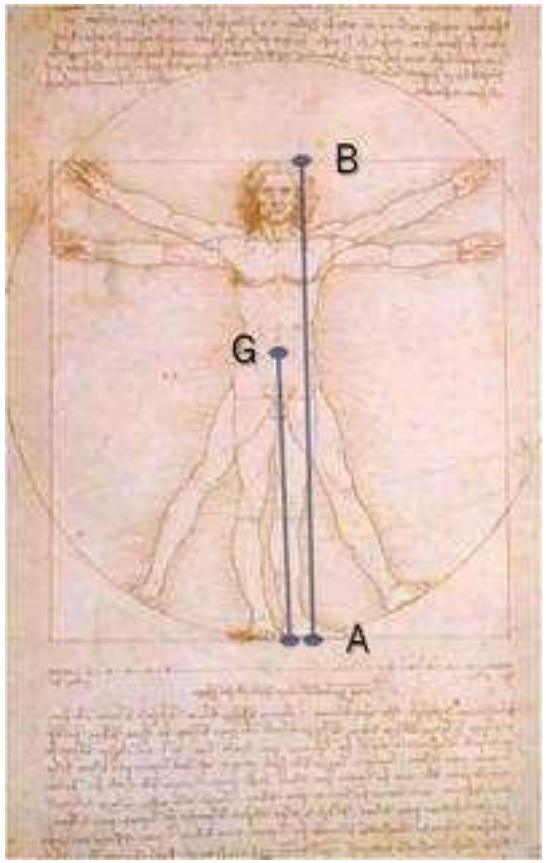
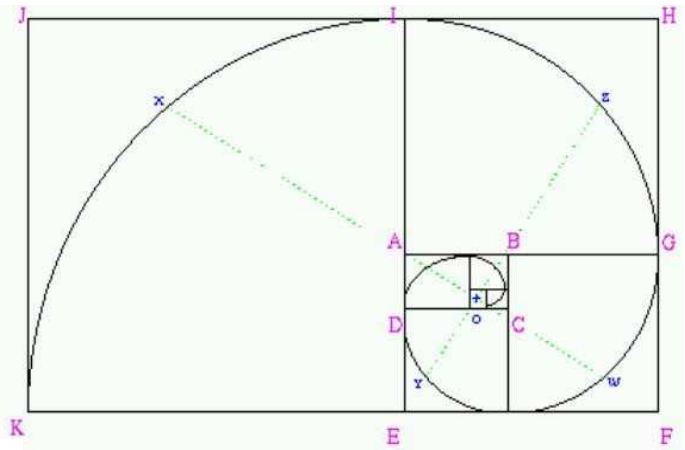
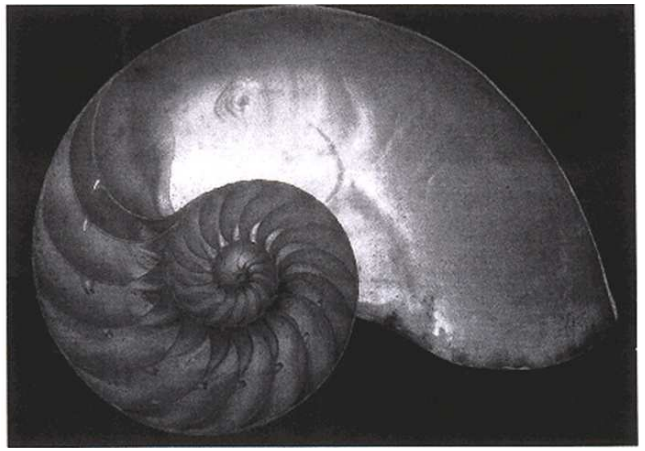


Le Corbusier's model for humans is largely based on *mathematical* principles: Golden ratio, Fibonacci numbers, and reminds of Leonardo da Vinci's *homme de vertruve*.



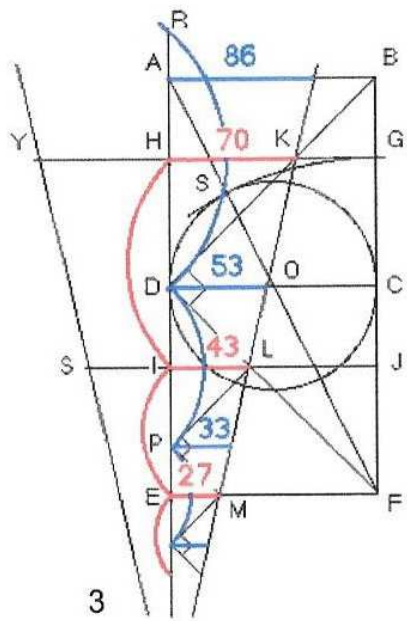


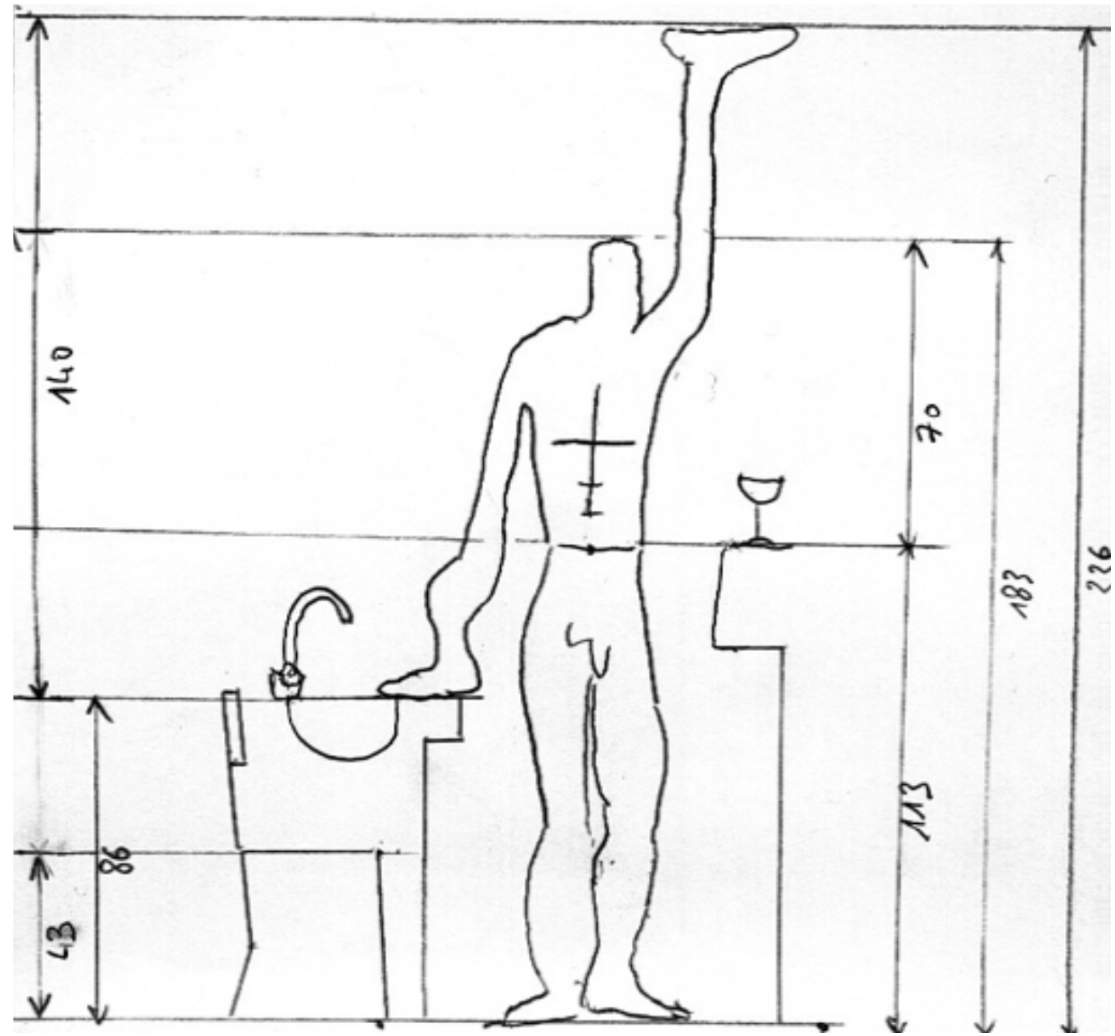
Also inspired by the Belgian statistician Quetelet's (Belgian statistician) work on the mean value published in 1844: *Sur l'appréciation des documents statistiques, et en particulier sur l'application des moyennes* (Engl translation: About the assessment of statistical documents, in particularly about applications of means).

Le Corbusier used sequences of numbers based on golden ratio used model the proportions of the human body…

Série rouge		Série bleue	
mètres	pouces	mètres	pouces
4,79	116”1/2	9,57	233”
2,96	72”	5,92	144”
1,83	44”1/2	3,66	89”
1,13	27”1/2	2,26	55”
0,70	17”	1,40	34”
0,43	10”1/2	0,86	21”
0,26	6”1/2	0,53	13”

Note:
Ignore pouches (inches), conversion doesn’t seem to be correct





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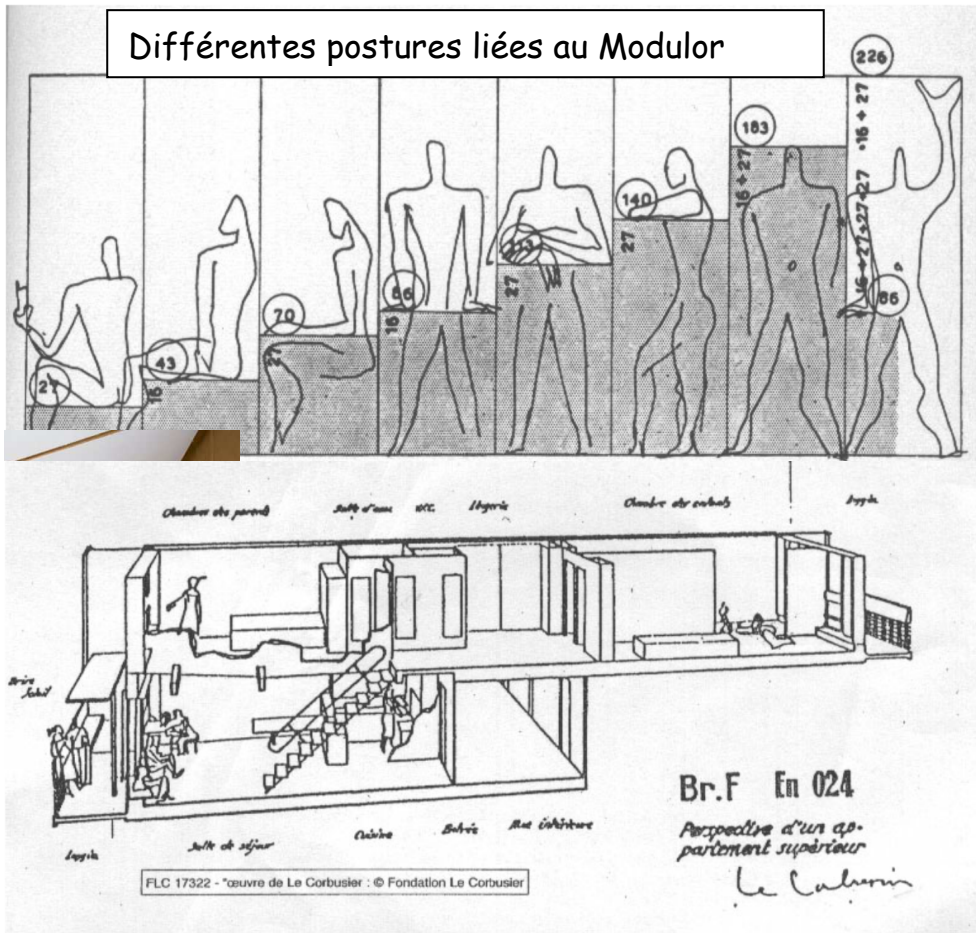
Models were used to design optimal flats

- Comfort, sunny, space-saving, relatively low building cost
- Facilities (store, restaurant, social space etc) part of design
- Suitable for growing European population at the time

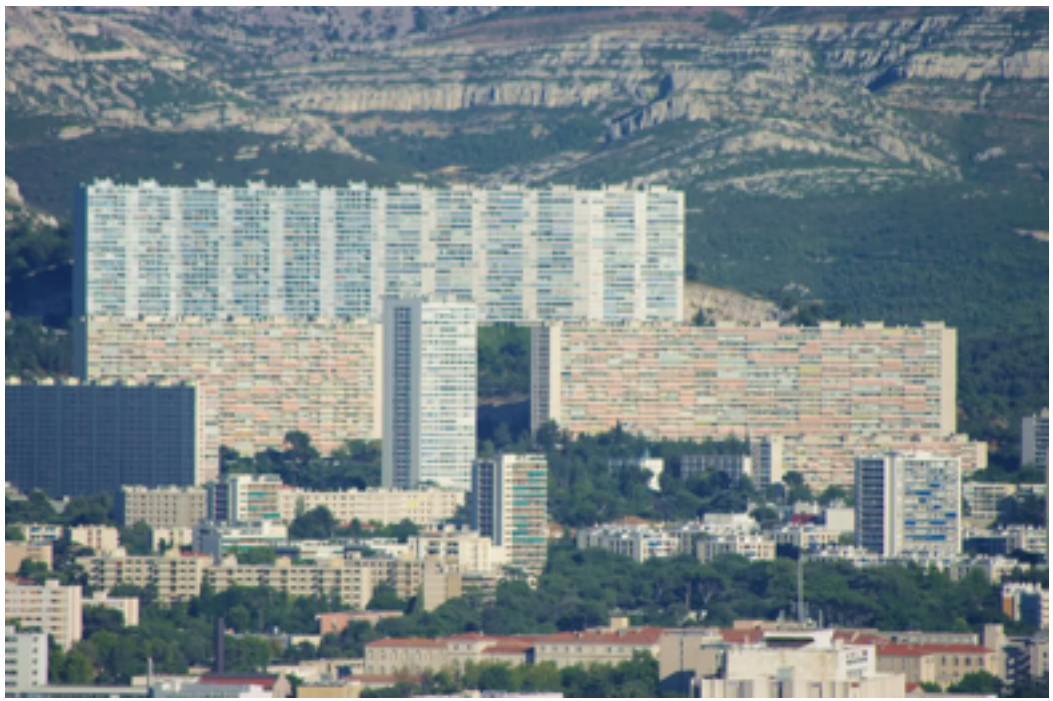


Corbusierhaus Berlin
(Engl. Transl.: Corbusier house Berlin)

https://upload.wikimedia.org/wikipedia/commons/a/af/Corbusierhaus_Berlin_B.jpg

Efficiency may go too far…

- *Les grands ensembles* (Engl. transl.: tower blocks) are linked to fundamental social crisis in France since the 1980s
- Gap between what model aimed to achieve and its consequences in the real world



Quartier de La Rouvière (9ème arrondissement) Marseille

http://tinypic.com/view.php?pic=2i0udtx&s=4#.WDORxzbjlss

https://lafautealecorbusier.wordpress.com/2012/10/16/les-grands-ensembles/

Species: xyz?

What are other idealised models of humans?

Part of the basis of cultures, philosophies, religions, emphasising different aspects of human nature.

Examples (brief summaries):

- religions: spiritual interest, divine goals, moral responsibility
- enlightenment: seeking truth, scientific approach, utility maximisation through rational actions
- authoritarian systems: binary division of humanity (followers and leaders), followers agree to sacrifice personal needs to achieve order and goals defined by leaders
- democratic systems: pluralistic view of humanity, social and individual responsibility and freedom ensure innovation, cooperation and productivity

Definition: Descriptive theory

Descriptive theories of decision making

- Determine *how and why* people make decisions the way the do (rational and not rational) in real life
- No *a priori* assumptions on people's motivations and capabilities
- Methods: Empirical studies, including field studies and lab experiments
- Models: Based on empirical studies, do not have to conform to existing axiom systems
- Can explain some situations where people's behaviour is inconsistent with the normative theories.

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Definition: Prescriptive approach

Normative and descriptive approach are opposites.

How can they work together in practice?

Prescriptive point of view

- Purpose is to *help* people to make good and better decisions
- Give practical aids with choices
- People who are less rational, but nevertheless aspire to rationality (e.g. operation research and management science).
- Support people in emotionally stressful decisions to limit damage from temporary moods; *"People make bad choices when they are mad or sad or stressed"* (Frozen)
- Decision support tools
- Education, training (e.g. CFAR, Harding centre)