



# Symbol grounding problem

→ Le problème de l'ancrage des symboles

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## Définition

“Jak dokonać tego , żeby semantyczna interpretacja systemu symboli formalnych była związana wyłącznie z tym systemem i nie ulegała wpływowi znaczeń, które mamy w naszym umyśle?”

**Harnad, 1990**



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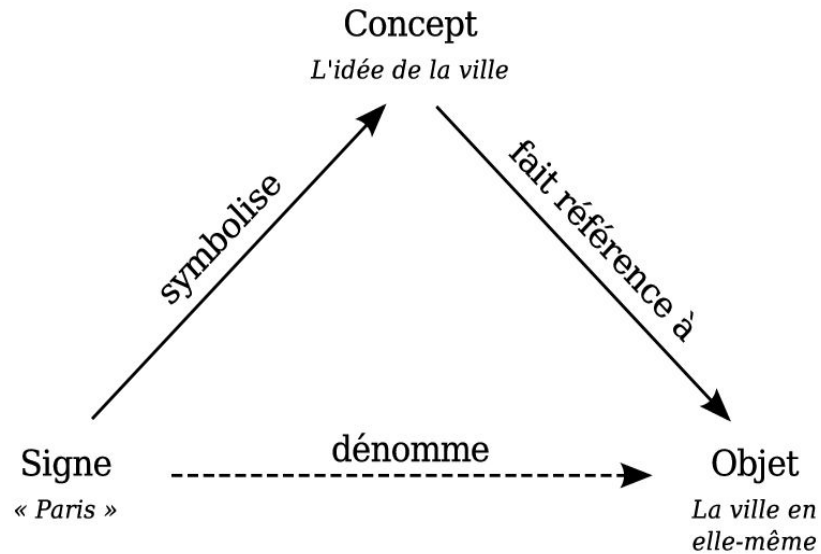
## Définition

“Comment faire en sorte que l'interprétation sémantique d'un système de symboles formels soit intrinsèque à ce système, plutôt que d'être parasitée par les significations que nous avons dans notre tête ?”

**Harnad, 1990**



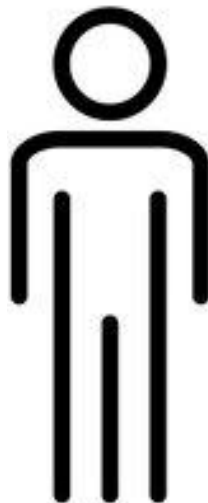
# Définitions



Triangle sémiotique  
(Ogden & Richards, 1923)

# Symbole

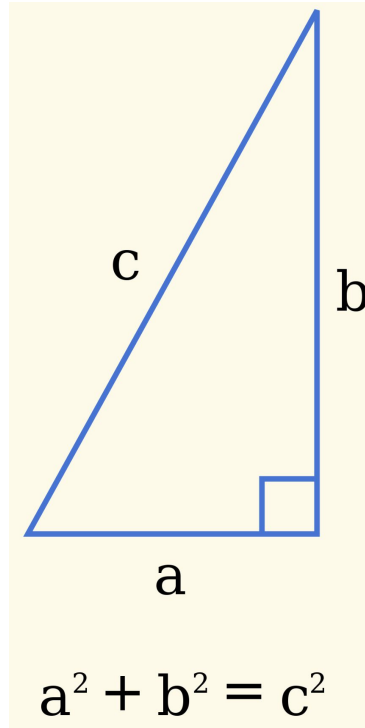
繪 Picture	水 Water	月 Moon	樂 Fun	朝 Morning	考 Think	雪 Snow	鳥 Bird
夢 Dream	人 Person	火 Fire	友 Friend	心 Heart	七 Seven	雨 Rain	宝 Treasure
金 Gold	花 Flower	夜 Night	八 Eight	空 Sky	風 Wind	強 Strength	土 Earth
猫 Cat	星 Star	二 Two	九 Nine	一 One	二 Two	三 Three	四 Four







# Objet





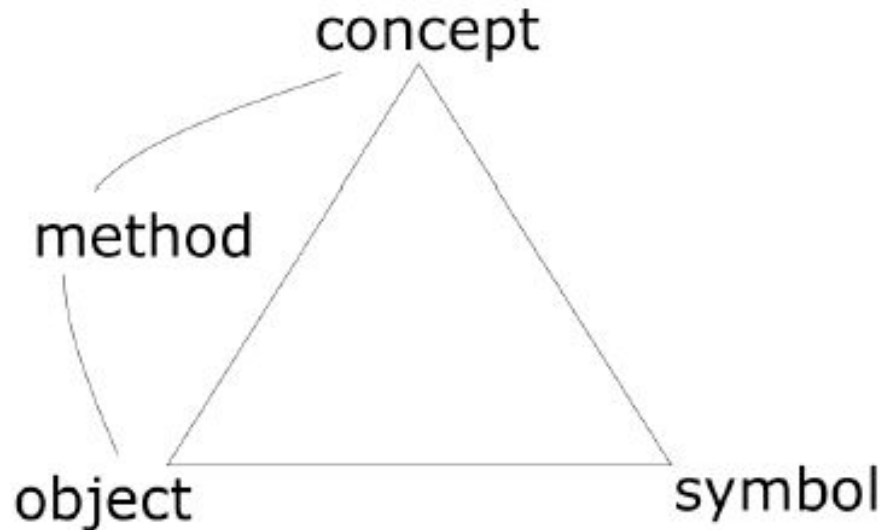
# Concept

- Une boisson alcoolisée obtenue par la fermentation du raisin.
- Un meuble ou autre objet disposé pour s'asseoir.
- Un véhicule de grande taille qui permet de transporter plusieurs personnes.

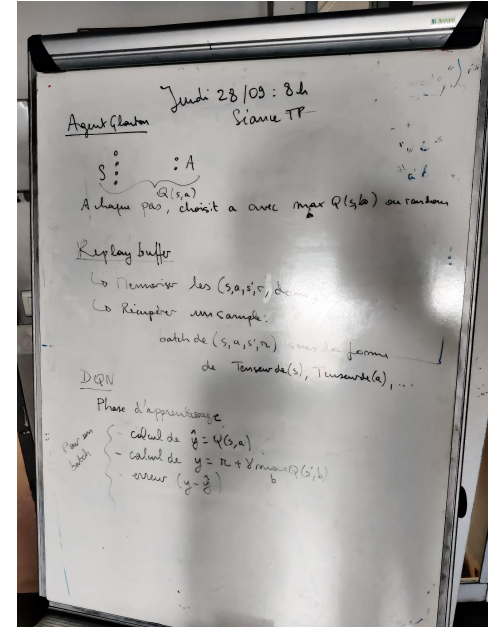


## Un symbole est ancré quand:

La méthode liant l'objet désigné et son concept est définie.



# Problème du contexte

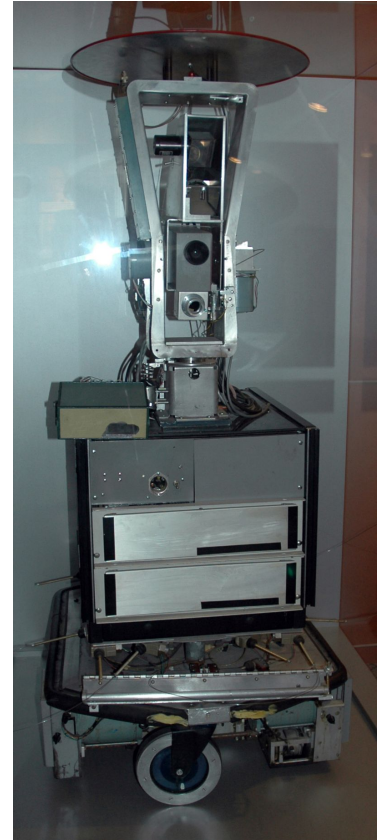


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## L'importance de la notion d'intrinsèque

“If someone claims that a robot can deal with grounded symbols we expect that this robot autonomously establishes the semiotic map that it is going to use to relate symbols with the world.”

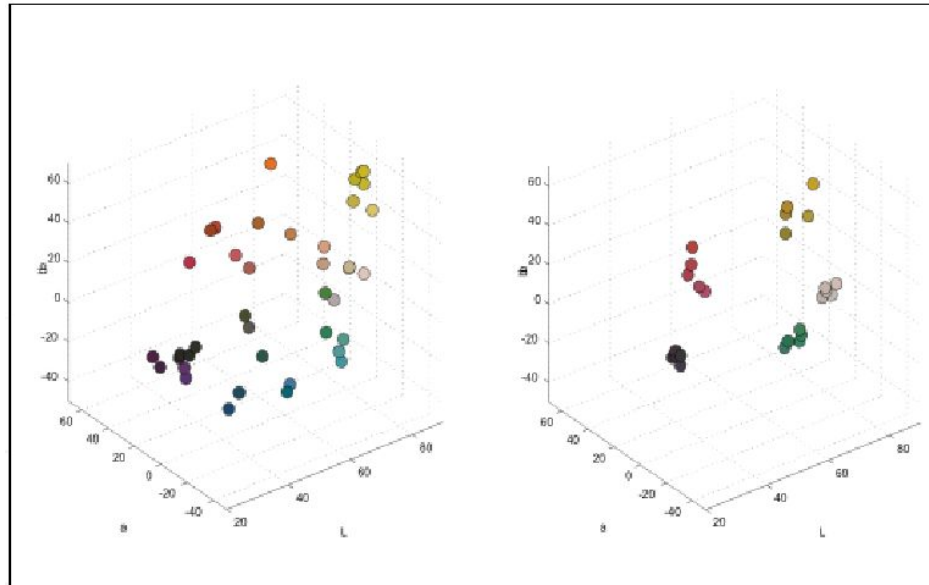
Harnad, 1990



Shakey the Robot, 1972



# L'importance de la notion d'intrinsèque



Luc Steels (2005)



# Historique

- 1990 => Harnad - The symbol grounding problem
- 2005 => Luc Steels - The symbol grounding problem has been solved, so what's next?
- 2007 => Taddeo & Floridi - A Praxical Solution of the Symbol Grounding Problem
- 2015 => Bringsjord - The symbol grounding problem ... remains unsolved.



## Et maintenant ?

- 2019 => Asai & Masataro - Towards Stable Symbol Grounding with Zero-Suppressed State AutoEncoder
- 2022 => Sever Topan - On Symbol Grounding in Machine Learning

# Bibliographie

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- *On Symbol Grounding in Machine Learning - ProQuest*. <https://www.proquest.com/openview/f7c77df53d2295a73fae2795e087777a/1?pq-origsite=gscholar&cbl=18750&diss=y>. Accessed 17 Oct. 2023.



# Merci pour votre écoute

Avez-vous des questions ?





## Débat

Les symboles du langage sont-ils tous ancrés chez l'humain ?



# Débat

Ancrage des symboles : la voie vers les IA fortes ?



# Débat

Peut-on parler de symbol grounding dans ChatGPT ?