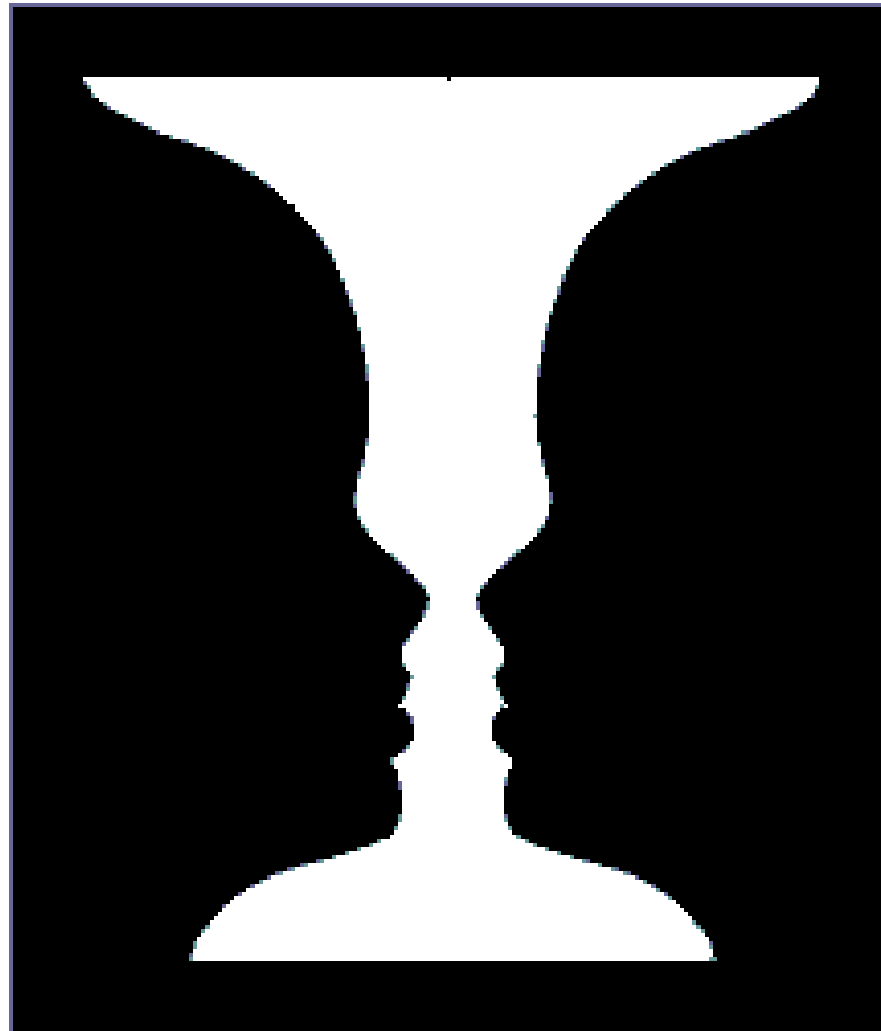


Changing Research & Policy Perspectives: Implications for Transport Performance, the Economy and the Environment

Prof. Peter Jones

Centre for Transport Studies, UCL

- Each profession works within a ‘paradigm’, which shapes:
 - Issues that are perceived and described
 - Problems that are diagnosed and prioritised
 - Solutions that are generated and evaluated
- Advances often happen through paradigm shifts
- Sometimes there are conflicting paradigms (e.g. medical profession)
- Importance of the paradigm is no less true in transport – though little discussed by profession



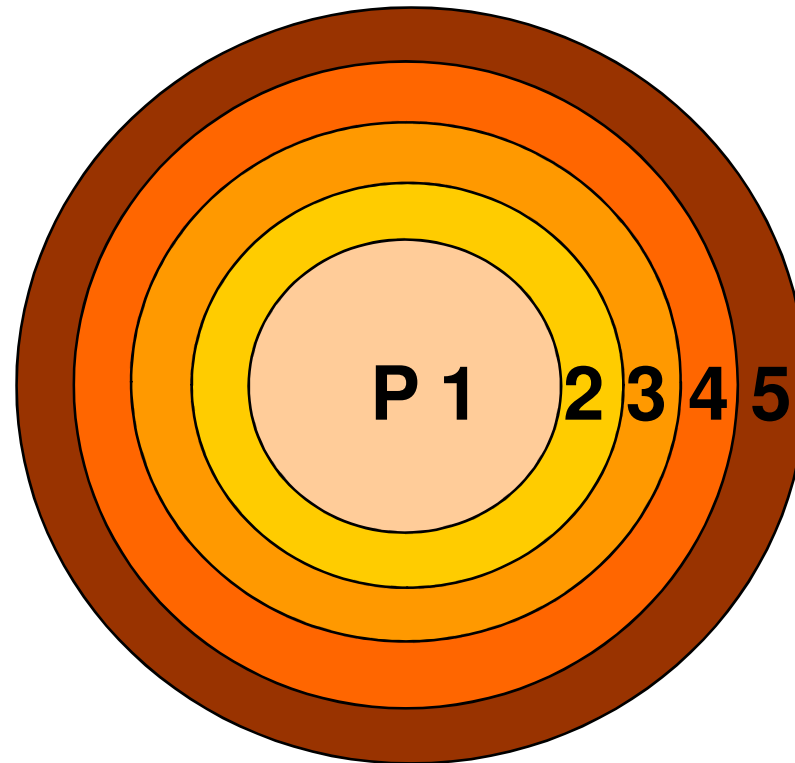
Edgar Rubin, 1915

- Aim of this presentation to demonstrate the pervasive role of paradigms in:
 - Strategic transport planning
 - Urban road design
- And to illustrate how these have influenced policy formulation, data collection, forecasting and evaluation

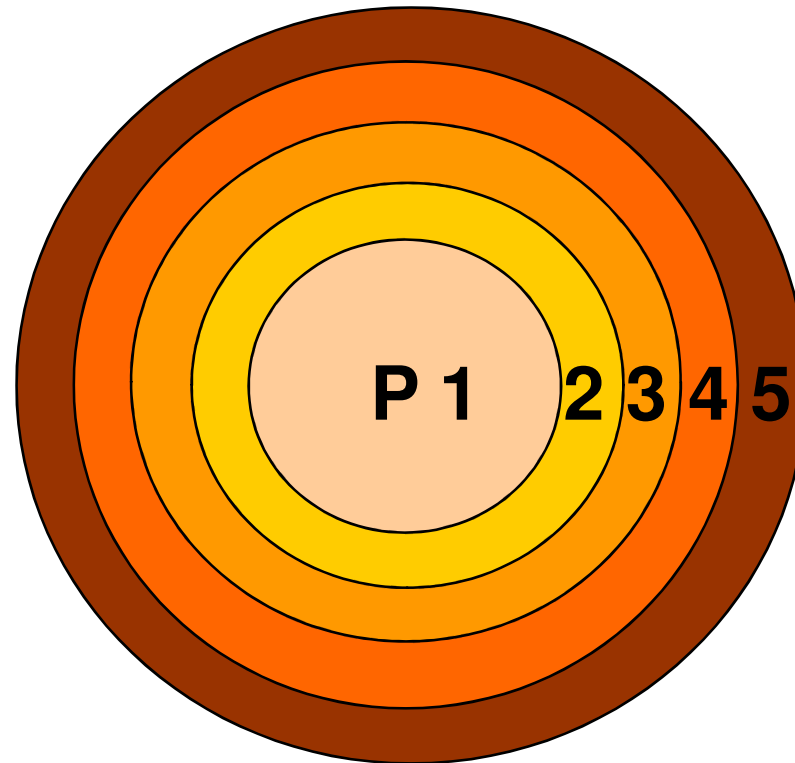
STRATEGIC TRANSPORT PLANNING

- Can identify a 'core' paradigm and four successive enlargements of perspective:

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Each triggered by some limitation with existing perspectives

- P1 Vehicle-based
- P2 Trip-based
- P3 Activity-based
- P4 Dynamics-based
- P5 Attitudes-based

P1	Vehicle-based	Engineering
P2	Trip-based	+ Economics
P3	Activity-based	+ Geography/planning
P4	Dynamics-based	+ Finance/marketing
P5	Attitudes-based	+ Psychology

P1 Vehicle-based

P2 Trip-based

P3 Activity-based

P4 Dynamics-based

P5 Attitudes-based

Focus on implications for personal travel

- Danger of over simplification:
 - Paradigms expansions not always temporally sequential
 - Developments cannot always be neatly put in one box (e.g. trip tours)
 - Not everything is ‘perspective’ driven (e.g. role of methodologies)

1. Vehicles



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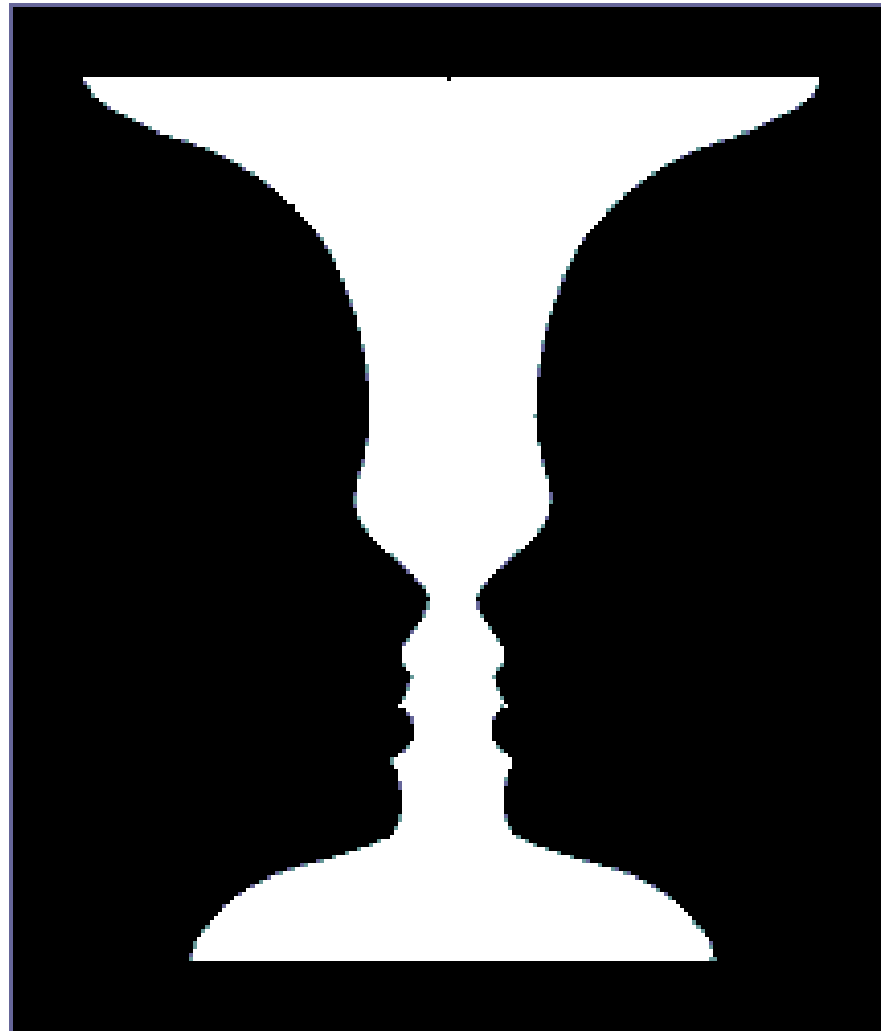
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BUT: what if cannot physically do this?

[e.g. LTS: 5X motorway capacity!!]

OR it is politically unacceptable?

[e.g. ‘Homes Before Roads’]



Edgar Rubin, 1915

2. Person Trips



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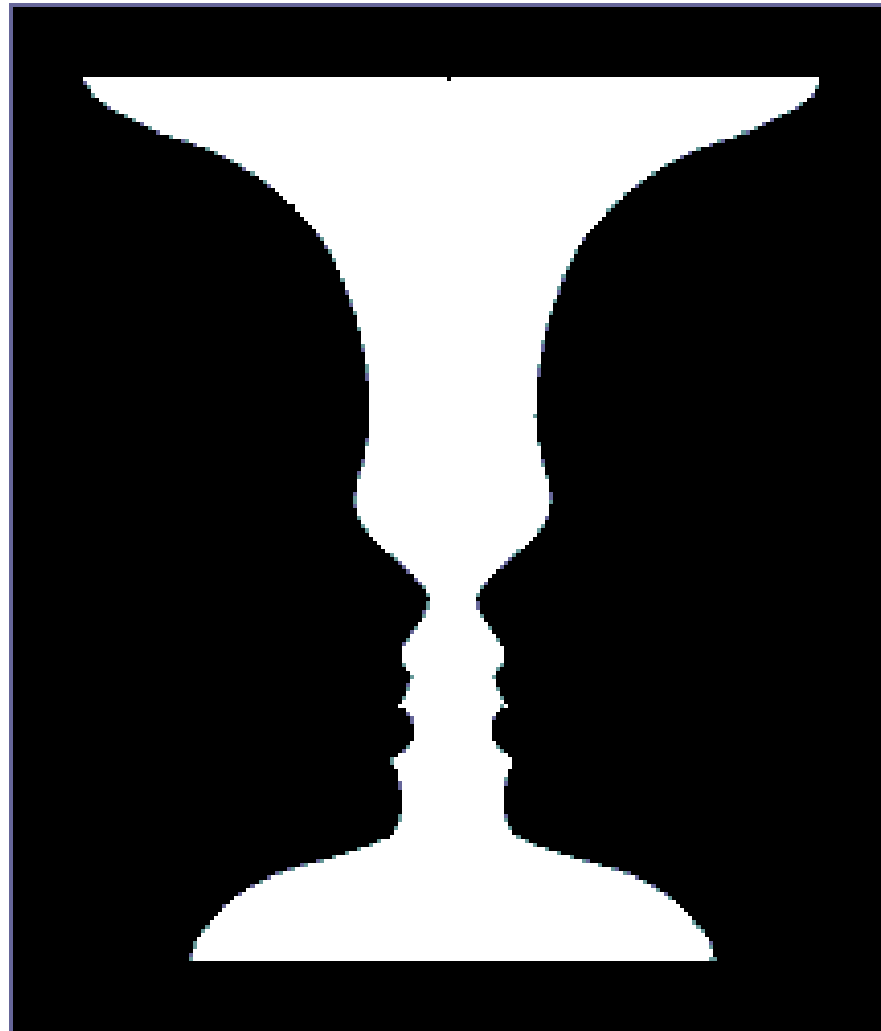
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BUT, what if still have problems?

- Modal alternatives don't meet people's needs
- Cannot forecast complexity of responses
- 'Too much travel'



Edgar Rubin, 1915

3. Activities



- Emphasis switches from travel to the activities that generate need for travel
- Travel now mainly a derived demand: the means of moving through space, to take part in activities at different places

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BUT – what about leads, lags and asymmetries in behaviour?



- Recognition that decision-making not instantaneous:
 - Lags: constraints vary in their temporal extent
 - Leads: people may make anticipatory decisions
- Importance of turnover in explaining aggregate tempo of change
- Recognition that policies take time








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BUT: Many factors which appear to influence behaviour are subjective not objective?

5. Attitudes



- Recognition of importance of beliefs, attitudes and social norms in influencing behaviour
- Also, growing interest in social issues and meeting people's needs as well as market demand
- Use information and marketing to influence behaviour

- Vehicles  Road capacity and Parking
- Person trips  Alternative modes and Traffic restraint
- Activities  Reducing travel and Tele-services
- Dynamics  Long-term and targeted interventions
- Attitudes  Information and marketing

- **Vehicle:** minimise car journey times
- **Person trip:** minimise person delay
- **Activity:** network reliability
- **Dynamics:** real-time network performance and system recovery
- **Attitudes:** quality of services, personal security

- **Vehicle:** more fuel efficient vehicles
- **Person trip:** switch to lower carbon modes
- **Activity:** use tele-services, or trip chain
- **Dynamics:** target interventions at decision points in people's lives, allow for build up over time
- **Attitudes:** encourage voluntary behaviour change and eco-driving

- Vehicles
- Trips
- Activities
- Dynamics
- Attitudes
- Roadside counts and surveys
- Household travel diaries – walk & cycle
- Activity diaries
- Panel surveys
- Attitude surveys

Paradigm expansion	Vehicle based	Person trip based	Activity based	Dynamics based	Attitude based
Widely used modelling capabilities	<ul style="list-style-type: none"> • Vehicle ownership forecasting • Traffic route assignment 	<ul style="list-style-type: none"> • Trip generation • Trip distribution • Mode choice (generalised cost) 	<ul style="list-style-type: none"> • Time of day switching 	<ul style="list-style-type: none"> • Ramp-up effects when forecasting 	

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Limited modelling capabilities or applications	—	—	<ul style="list-style-type: none"> • Activity set generation • Trip/tour generation • Modelling inter-personal linkages 	<ul style="list-style-type: none"> • Dynamic model estimation • Asymmetrical responses 	<ul style="list-style-type: none"> • Modelling impacts of information provision or image enhancement

Appraisal capabilities/requirements

Paradigm expansion	Vehicle based	Person trip based	Activity based	Dynamics based	Attitude based
Generally used appraisal variables	<ul style="list-style-type: none">• Operating costs• Accident costs• Air pollution and noise	<ul style="list-style-type: none">• Travel time savings by purpose	<ul style="list-style-type: none">• <i>Health benefits</i>		<ul style="list-style-type: none">• <i>Quality of a journey</i>

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Missing or very limited variables		<ul style="list-style-type: none"> • Travel time variability 	<ul style="list-style-type: none"> • Value of activity participation • Value of access/choice • Value of generated travel 	<ul style="list-style-type: none"> • Implications of turnover on valuation • Option values for potential future needs 	<ul style="list-style-type: none"> • Value of improved information • Value of enhanced quality

- Development of models and appraisal techniques lag behind perspectives, and restrain innovative implementation:
 - Effect of ‘fixed trip matrix’ assumption from original vehicle paradigm
 - Poor at forecasting info & attitude change
 - Vehicle-based perspective still at core of appraisal
 - Focus on VoT **saving**, not VoT influences investment priorities (e.g. road vs. rail)

URBAN ROAD DESIGN

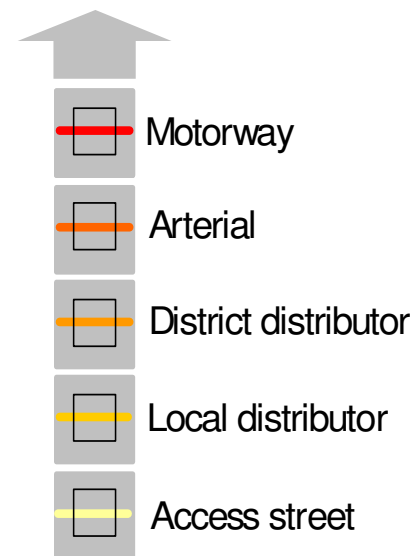
- Until recently, urban road design rooted in vehicle-based paradigm
- Priority given to vehicle movements, through a range of measures
- Lack of incorporation of later strategic transport planning perspectives
- Lack of recognition of other urban street functions
- Resulting in poor street environments, severance, etc.





- New design guides (e.g. UK 'Manual for Streets') stress importance of 'Place' alongside movement/Link function
- So, need for paradigm enlargement to recognise dual functions of streets
- Changes perspective on the street:
 - Measurement of performance & prioritisation
 - Generation of design options
 - Appraisal of options

**Traditional road
hierarchy**

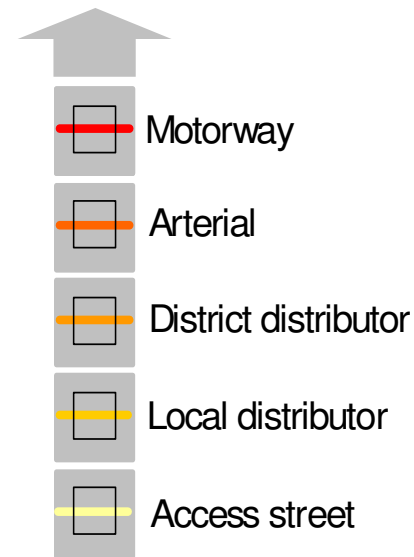


Contrasting perspectives

Link/Place street matrix

	National	City	District	Neighbourhood	Local
National	I-A	I-B	I-C	I-D	I-E
City	II-A	II-B	II-C	II-D	II-E
District	III-A	III-B	III-C	III-D	III-E
Neighbourhood	IV-A	IV-B	IV-C	IV-D	IV-E
Local	V-A	V-B	V-C	V-D	V-E

Traditional road hierarchy



LINK:

- Full design standards
- Quantitative PIs
- Modelling flows, etc
- Evaluation of user benefits:
 - VoT savings
 - NOT value of bus lane!

PLACE:

- Partial design standards
- Qualitative PIs
- Modelling - ??????
- Evaluation of features; no direct measures of user benefit:
 - VoT SPENT
 - Quality of experience

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- As working environment has changed, so need for paradigm enlargements
- But restraining historical legacy – especially methodologically
- Can we expect new paradigms to add to current perspectives?
 - Social networks and ‘mobilities’?

Thank you

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