Critical realism and housing studies: An explanation for diverging housing solutions.

Lawson, J.M.

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: https://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
Chapter 3 Methodology and Comparative Research

3.1 Introduction

International comparisons of housing and urban phenomena are undertaken for a variety of reasons. These include policy development, problem evaluation, the testing of explanatory theories, or the development of new ones. The purpose of comparative research should correspond with the type of conclusions sought: describing, evaluating, suggesting actions or explaining the topic of interest. Some studies may demand a combination of aims and outcomes; for example, that the research be both evaluative and action-orientated.

Whilst the purpose of comparative research may be easy to define or discern, the ontology and epistemological process tends to be far less explicit. The attractiveness and curiosity of international research on housing and urban phenomena, often overshadows the difficulties of tackling more complex issues such as the focus of comparison, rationale for case selection, the time period to be analysed, the uniqueness of institutions and their path dependency. The purpose of this comparative study is the development of not only a new explanatory theory of difference for housing provision, but also a fresh, new application of a specific ontological theory and epistemological approach.

Epistemology refers to the theory of knowledge. It concerns the conditions, possibilities, nature and limits of knowledge (Blaikie, 1993:6, Danemark et al., 2002:206). This is clearly linked and builds upon any theory of reality or ontology. This Chapter argues for a specific epistemological approach to comparative explanation, which is compatible with critical realist ontology, as promoted in Chapter 2.

At the methodological level, there are a number of coherent 'packages' of ontology and epistemology that can help clarify the comparative research strategy. These include positivist deduction, interpretive abstraction, and realist abduction and retroduction. Conscious selection of such a package is important, as the choice determines the object or level of comparison. The focus and subsequent comparative analysis of cases may rest upon observable regularities, patterns of behaviour or events, socially constructed meanings, underlying social relations or causal mechanisms. Together, the purpose, desired outcome, logic and object of research will shape the entire design of the cross-national comparative research strategy.

Employing the chosen ontology and methodology of realist abduction and retroduction requires the development of a clear, albeit preliminary conceptualisation of the endogenous relations relevant to the phenomenon under investigation and an appreciation of the exogenous relations, often described as context. This Chapter provides an initial sketch of such a concept, whilst a more elaborate version is promoted in Chapters 4 and 5.

Differences and change in housing solutions are often simply explained as differences in context. But what is context, what are the endogenous and exogenous relations of housing provision and how can they influence difference and change? To answer these questions,
much needs to be known about the underlying relations, embedded institutions, development pathways and influential conditions affecting particular forms of housing provision. Towards this end, important questions include: what does the housing solution necessarily comprise, what are the underlying relations between agents producing and reproducing it, what institutions sustain the phenomenon and what factors influence change?

Following this introduction, section 3.2 will discuss ways to approach the comparison of two long established housing solutions represented by different housing tenures and urban forms in Australia and The Netherlands during the twentieth century. The term housing solution refers to the coherent fit between social relations underpinning a housing system and the practical solutions and outcomes produced. It is contended that housing solutions in Australia and The Netherlands have emerged from the fundamentally different packaging of property, investment and savings and labour and welfare relations, which have promoted distinctive housing choices and living environments. Most Australian households aspire to home ownership and reside in large, low-density cities. In The Netherlands, until recent years, social rental housing has been the dominant tenure in relatively numerous compact towns and cities.

Section 3.3 builds upon the ontology of critical realism and the corresponding epistemology of *abduction and retroduction*. The basic tenets of critical realism are further outlined: structured reality, necessary and contingent relations, clusters of causal mechanisms. To understand the observable world it is considered necessary to postulate and empirically validate the kind of necessary and contingent relations that underlie, and tend to influence, actual events, experiences and outcomes of housing solutions over time.

To bring the necessary and contingent relations 'to the surface' and identify the causal mechanisms at work, additional concepts concerning agency must be employed. Towards this end, section 3.4 critically reviews the notions of risk and trust in housing studies more generally and a preferred concept of agency is distilled. This contributes to an emerging debate in housing studies concerning risk and demonstrates how the concept relates to the finance, land development, construction, exchange and consumption of housing, within the shifting boundaries of the welfare state and the increasingly global political economy. It is considered that risk perception emerges from the dynamic interactions of relations underlying a housing system as well as threats or opportunities that lie 'outside' the housing system. In the context of uneven power resources, housing agents compete or collaborate to establish norms, policies, contracts and laws. These conventions can be perceived as the organisation of trust to minimise perceived risks in the housing system. The organisation of trust may be sustained or undermined by the open and dynamic nature of housing solutions. In subsequent Chapters, an historical view of housing related risks is taken in the two countries: Australia and The Netherlands which enables consideration of the extent to which the concept of risk provides a vehicle for understanding two very different housing 'solutions'.

In section 3.5, we move beyond abstract concepts to consider more concretely the role risk and trust plays in housing related actions. Building on the concept of clusters of necessary and contingent relations underlying urban form and housing tenure, a number of important social relations, those of property rights, savings and investment and labour and welfare, are further examined. It is contended that the state plays an integral, mediating and contested role in the definition of these relations and their structural coherence in generating actual housing

---

7 Berry (1998) uses the term in a somewhat looser sense, referring to the low-density, home-ownership dominated outcomes of the Australian housing system.
solutions. For this reason, understanding the institutionalised role, relations and resources of the state is also an integral part of any explanation.

Finally, section 3.6 summarises a number of issues associated with comparative research: the level of comparison and the problem of time and space, and stresses the need for a strategy that compares clusters of causal mechanisms rather than events or experiences of them. This approach will inform the selection of the two case studies: The Netherlands and Australia. It is contended that each case provides a good illustration of the significance of defining and packaging property, finance and welfare relations differently upon housing tenure and urban form. Comparison within these case studies, during periods of crises, adaptation and coherence, demonstrates the sustainability and change of different clusters under dynamic political, economic and cultural conditions.

3.2 Conceptualising Housing Solutions

Despite similar economic and demographic trends (Donnison 1967, with Ungerson, 1982), housing solutions in many Western industrialised capitalist countries have fundamentally diverged (Kemeny and Lowe, 1998; Golland, 1998; Doling, 1997; Boelhouwer and Van der Heijden, 1992). To analyse divergence, various approaches have been developed to compare housing systems and explain important differences between them.

Often implicit and difficult to expose, divergent research strategies can stem from quite incompatible ontological and epistemological foundations. Differing perceptions of how a housing system works and different modes of logic and justification, has led to the employment of different categories, foci, frameworks and typologies for analysing housing systems.

More explicit and comprehensive descriptive tools include the chain of provision framework developed and applied by Ambrose (1991, 1994) which emphasises the wide variety of state, private and voluntary configuration of agents engaged in the interconnected stages of housing promotion, investment, construction, allocation and maintenance (Ambrose, 1991:41, Doling 1997:50). Similarly, the structure of housing provision (SHP) thesis (Ball, 1986, 1988, Ball and Harloe, 1992) provides a meta-tool to explore a diversity of housing solutions. Ball stresses the need to identify the social agents involved in the production, allocation, consumption and reproduction of housing (Ball, 1986:160) and their inter-linkages (Ball, 1988:29). Sensitivity to these unique relationships helps the researcher to understand difference. Boelhouwer and Van der Heijden (1992) have developed a more concrete model outlining numerous background factors, which may influence the structure of the housing market in different countries. Lundqvist (1990) has also put forward a useful scheme categorising the variety of interventions employed by governments to influence household income and dwelling costs.

In contrast to Ambrose and Ball, who stress the unique nature of housing networks, various typologies of housing systems have also been developed as a basis for testing theories concerning the driving forces influencing different housing systems. These include the liberal-corporatist-social democratic typology and the evaluative comparison of Barlow and Duncan (1994) and Golland (1998) and Lundqvist’s theories of the ‘political-ideological and structural-institutional’ relations underpinning market-state mixes in housing policy (1989,
1991). Country-specific theories, from a variety of perspectives, also try to explain the development and change of specific housing outcomes.8

There are important similarities in contemporary comparative approaches: most stress the relational, multi-dimensional quality of housing phenomena, the inter-connectedness of housing systems with other non-housing phenomena, and the dynamic and shifting nature of housing systems. Debate is most divisive concerning the appropriate level of comparison, relative causal powers of particular relations in a housing system, the direction of change, and the universality of explanatory theories.

The remainder of this Chapter seeks to contribute towards this debate by returning to the ontological and epistemological basis of housing solutions. What do we need to examine to explain difference and what type of evidence would provide an empirically plausible explanation? Categorising variables across nations can provide stimulating descriptions but cannot explain difference. Further, typologies (or ideal types, contrastive tools) of housing systems may reduce the researcher’s sensitivity to the unique configuration of social relations underlying national housing solutions and their uneven application across regions and localities. It will be argued that explanation of difference and change requires a deeper level of analysis of the causal mechanisms underlying housing outcomes over history and geography.

3.2.1 The Prospects and Limitations of the Structure of Housing Provision approach

Over the past decade, a simmering methodological debate has divided a number of comparative housing and urban researchers.9 Ball (1998, 1988) remains one of the most fervent critics of comparative research, arguing that it is descriptive, shallow, policy focused, and unable to explain housing in terms of wider economic structures and uneven power relations. His sharpest criticisms have been directed towards the liberal-interventionist view, which pervades some comparative housing research. Such research is considered to focus upon consumption dimensions between tenants and the state, ignoring the relations of production and treating state intervention as a mere deviation from normal market relations (1988:21-22).

In contrast, Ball promotes the structure of housing provision approach (SHP) which assumes, in the first instance, that housing systems are "an historically given process of providing and reproducing the physical entity, housing". He recommends that researchers focus on the social


agents essential to the process of housing provision and the relations that exist between them (Ball, 1986:158).

SHP has been developed and defended by Ball and Harloe since the mid-1980s as a tool for the explanation and comparison of housing systems (Ball, 1986, 1988; Ball and Harloe, 1992). However, SHP is a meta-tool. It does not theorise or generalise the type of relations that may exist in a housing system, other than to suggest the examination of broad economic relations such as the extraction of surplus value through exchange and production, and the reproduction of labour power through consumption of certain forms of housing. Nor does SHP stress how differences are established between or within housing systems. Finally, the SHP approach does not provide a clear epistemology or clues to help distinguish cause from association in 'context'.

To build upon the ontological foundations of Ball (1986, 1988, with Harloe, 1992) and address the methodological deficiencies of SHP, this Chapter re-interprets and elaborates their approach, using critical realist ontology and retroductive epistemology. It is argued that particular clusters of social relations can become ‘packaged’ or temporarily locked together in coherent, albeit conflicting, ways. This structural coherence tends to differentiate actual housing solutions at the base.

Ball tends to downplay the role of the state (1988) and emphasise the economic relations of production. Whilst these relations are important, this research assumes that the state plays an integral role in regulating such economic relations. Indeed, the relations of property, finance and welfare play a fundamental role in defining housing solutions. Their establishment and development is by no means a ‘natural’, given or random process, but one mediated by the state (Jessop, 1990). The state itself is subject to the uneven, often conflicting power relations that are concretised in the fiscal, territorial and democratic rules of the state (Terhorst and Van de Ven, 1997) and expressed (or suppressed) via informal norms, ideologies, processes and practices (Saunders, 1983, Lukes, 1974).

### 3.3 Realist Concepts - an Introduction

This section elaborates the ontology of necessary relations, contingent relations, clusters of causal mechanisms and the epistemology of retroduction, which are to be applied to the subsequent study of change and difference in housing solutions.

#### 3.3.1 Necessary and Contingent relations

To begin, explanations of housing systems informed by the philosophy of critical realism, are

*concerned in a significant way with identifying social structures and conditions which govern, facilitate, or in some way produce, actual social events and states of affairs of interest (Lawson, T. 1997:192).*

Necessary relations inform our understanding of the relationships between agents in a housing solution. Different necessary relations bind tenants to landlords, landowners to purchasers, borrowers to lenders, and commissioners of projects to builders. Many comparative studies implicitly assume that relations between agents in housing systems are the same across different countries. This is clearly not the case. We cannot, for example, apply the same
definition of tenancy to analyse housing consumption in different countries (Barlow and Duncan, 1989; Marcuse, 1994).

Necessary relations are not fixed behavioural laws or predictors of events. They do not exist as isolated atoms in a laboratory. There are no standard definitions of necessary relations applicable to all time and space. This is not a deficiency but the recognition of the "open and ontologically stratified structure of reality (both natural and social) outside the experimental laboratory" (Steinmetz, 1998:174). Necessary relations are actualised in the context of other sets of interacting contingent relations. For this reason, concrete historical case study research is an integral part of the explanatory process.

Contingent relations are circumstantial relations that intersect with necessary relations to divert their 'necessary outcome'. Contingent relations may impede, mute, stifle and even extinguish the necessary relationships of a network. They are always present in open, interactive systems. In this way, necessary relations can only be regarded as causal in a limited sense. They generate tendencies and probabilities but cannot directly generate specific events or experiences of them. For this reason, contingency is a very important notion for examining difference in housing solutions. With its' many multi-dimensional relationships, the production, exchange and consumption of housing is highly vulnerable to changes in contingent conditions. Many different, often unanticipated actions, events and relations may influence internal dynamics of provision, and indeed have a cumulative effect on entire systems of provision.

For these reasons, the housing solutions can be understood to be highly dependant upon other networks of provision such as the finance, labour, and property sectors. For example, the level of housing production is sensitive to the availability of credit, which at any given time may be diverted to more lucrative forms of investment. It is also sensitive to increased labour and material costs, and of course changes in household income.

Figure 3.1 illustrates the basic idea; necessary relations are defined in the context of contingent relations. Thus, relations between agents 1 and 2 are subject to contingent conditions.

![Figure 3.1 The interaction of necessary and contingent relations](image-url)
3.3.2 Clusters of Causal Mechanisms

In combination, necessary and contingent relations provide the foundations for explaining particular relationships underlying housing solutions. As stated, relations can only be isolated in thought, existing in real life in the context of other necessary and contingent relations. Their combined interaction forms a cluster of causal relations with the capacity to influence broader housing processes and events. Causal clusters underpin conventions that enable or constrain housing outcomes such as property rights, the system of credit provision, development promotion and production, dwelling allocation and consumption.

Figure 3.2 illustrates the type of necessary and contingent relations in a housing solution, which may interact to form dynamic clusters of causal mechanisms.

From a realist vantage point, illustrated by Figure 3.2, SHP is redefined as a cluster of social relations that can be postulated and empirically tested and revised. Clusters of social relations, such as those influencing property development, investment and consumption, interact with one another to influence housing solutions. Differences within such a cluster may be able to explain key differences in actual housing outcomes. The key to comparison, therefore, is to postulate, revise and contrast clusters of causal mechanisms in different case studies towards an explanation of difference.

3.3.3 Postulating Causal Mechanisms – the Process of Abduction and Retroduction

As stressed throughout this Chapter, every ontological perspective implies a corresponding epistemology or theory of knowledge. Preferably this theory should be explicitly introduced, justified and rigorously followed, enabling the researcher to confidently say: this is how I reached these conclusions. However, logical coherence cannot be taken for granted (Lawson, T. 1997). Methodology is often hidden amongst research findings or explicitly avoided, with the results justifying the means.
In contrast with positivist comparative strategies, realist inspired explanatory research does not begin with international comparisons between categories of constructed variables because this process cannot explain difference. Such a strategy is merely a fishing expedition, which reduces sound reasoning to the accidental discovery of correlations. Alternatively, explanation informed by realist ontology tries to postulate and reveal the underlying causal mechanisms of change and difference through strategic, historical case study research. Any subsequent international comparison contrasts these underlying causal mechanisms, rather than observable events or experiences.

Whilst housing outcomes are often observable and even measurable, their underlying causal mechanisms are not. Indeed, analysing the traces emitted by underlying causal mechanisms will not lead directly to their exposure. Because of the open, contingent nature of housing solutions, there is no direct link between mechanism and outcome – cause and event. Thus, the link must be postulated and tested in a continual and spiralling process known as abduction and retroduction (Dannermark et al., 2002, Steinmetz, 1998; Lawson, 1997, Blaikie, 1993; Keat and Urry, 1975; Harre, 1976), towards empirically competitive explanations (Bhaskar, 1993, Sayer, 2000).

Realist abduction and retroduction is not new, it currently provides a springboard for research and debate within a variety of social scientific disciplines including geography (Terhorst and van de Ven, 1997, Banai, 1995, Sayer, 1985, Dickens, Duncan, Goodwin, and Grey, 1985), sociology (Steinmetz, 1998, Pawson and Tilley, 1998, Sayer, 1984, 1997, Jessop, 1990, Outhwaite, 1987, Keat and Urry, 1975, New, 1995) and economics (Lawson, T 1997, 1999, Fleetwood, 1999, Collier, 1994). Abduction involves the contestable postulation of ideas and concepts relevant to the object of study and their use in interpreting and recontextualising phenomena, in order to produce a new description for analysis. Realist abduction has been used to generate new interpretations, which have been analysed to explain differences in the spatial form of cities (Terhorst and van de Ven, 1997), differences in housing policy between nations and regions (Dickens, Duncan Goodwin and Grey, 1985) and provide reasons for the success of social programs (Pawson and Tilley, 1998). Further, it has stimulated alternative perspectives and criticisms, such as the critique of mainstream neo-classical economics (Lawson, T, 1997) and rigid positivism or post-modernism in social history (Steinmeitz, 1998).

Blaikie (1993:162-169) and Lawson (T, 1997) summarize the retroductive strategy by drawing upon the writings of Harré, (1961), Bhaskar (1979) and Keat and Urry (1975). First, researchers should aim to discover the relevant structures and mechanisms that explain observable phenomena and regularities. Critical analysis of everyday conceptions of reality should lead to the postulation of these (perhaps unacknowledged) structures and mechanisms (Lawson, T, 1997:196). Examining actual empirical consequences should test these ideas and concepts of causal mechanisms. Finally, the model should be continuously tested and revised until it ‘fits’ these consequences.
3.4 Risk and the Organisation of Trust

So far a generic metaphorical model, depicting a cluster of necessary relations and contingent conditions, has been put forward in Figure 3.2. Yet this model is highly abstract and cannot account for tendencies in specific housing solutions. It certainly cannot explain day-to-day decisions or micro interactions. Assuming causal mechanisms can help to define the ‘realm of the possible’ in actual housing solutions, clues to their existence can be found in the realm of experience and perception via intensive case study research. Towards this end, this section elaborates critical realism’s definition of the experience and event dimensions of reality by introducing the concepts of risk and trust.

The study of risk and risk assessment is a growing field that has emerged from particular branches of economics, behavioural psychology and is related (although not necessarily so) to rational choice theory. The notion of ‘risk’ has been applied to a diverse range of substantive fields including organisational decision-making, financial management, marketing, health policy and environmental assessment. The contribution of risk researchers varies from self-assured calculation of objective risk to discursive debates on its social construction (Johnson and Covello, 1987). The realm of research also varies significantly. Risk has been applied to shifts across western society (the transition from modernity to radical modernity) and within household relations, as well as shifts in the global money market. Risk is also viewed as being differentially perceived between different actors, professions, groups, classes and cultures; and must be historically and spatially defined (Carlson and Millard, 1987).

3.4.1 The use of Risk in Housing Studies

The concept of risk has entered the field of housing studies, particularly in the UK where home purchasers experienced a major economic downturn generating unemployment, falling house prices, negative equity, and a jump in mortgage defaults, leading to housing related poverty. The following section outlines and evaluates the various notions of risk and trust that appear in this primarily British housing literature.

These notions concern:

- Constantly shifting definition of risk
- Risks vary throughout one’s housing career
- Risks are multiple and unevenly allocated
- Information about risks varies between agents and limits ‘perfectly rational’ decision making
- Sources of risk and our ability to control them differ
- Allocation of risk and the asymmetric organisation of trust
- Measures to protect households against risk and their differentiation by tenure
- Risk as a basis for understanding social change

Housing risks are constantly shifting

A basic definition of risk, chance or ‘odds’ concerns the perception of potentialities, which may positively or negatively influence the achievement of desired goals. This perception may be based on experience and evidence - however complete, accurate or otherwise. Take for example the capital gains estimated on the speculative purchase of a home. The size of a
financial gain may be subject to the extension of a nearby freeway, off site investments in the surrounding neighbourhood and confidence amongst potential purchasers of an inflating housing market.

In this vein, Croft (2001) considers housing risks as complex and multiple, unevenly distributed and dynamic (ibid, 2001:738-742). Her preferred definition of risk in housing studies is one that embraces changing nature of risk, the different perceptions of uncertainty and their potential consequences. Risk is not appreciated in a uniform manner, nor is it only experienced as a threat but may offer positive opportunities. Further, when uncertainties crystallize into consequences they too may bear further implications.

*Risks vary throughout ones housing career*

The simplest application of risk to the realm of housing studies concerns the potential threats to the achievement of an individually desired housing career or ladder. Traditionally life course risk analysis has focussed upon the choices households actually make and their demographic and socio-economic characteristics. Actual events, available resources, and perceived opportunities or risks may influence steps down or ‘along’ the ladder, or indeed ‘falling off’, leading to displacement or homelessness.

In Western capitalist societies, most households pay for their housing services in some form. Payment implies that the ability to consume largely depends upon one’s financial resources. Such resources are strongly related to income as defined by the households’ position in the paid labour market, the number of dependents, living and lifestyle expenses, and any provisions derived from a welfare system emergent from family, community, private or government relations. Transfer payments or subsidies from the state to the individual, such as rental allowances and the ability to deduct interest from taxable income, may assist in the ability to pay for housing costs. In the case of home purchase, payments for housing services may relate to a schedule of mortgage payments to a financial institution and vary according to the purchase price, the duration of the loan and changes in the interest rate. The level of payments made by renters to their landlord is less often dependent on the original purchase or cost price of the dwelling and is often more related to the market position of tenant and possibly subject to the conditions laid down in a rental agreement. Nevertheless, in both cases the capacity to pay for housing services is largely determined by ones income (Terhorst and Van de Ven, 1988:23).

At certain life stages or circumstances, the risk of income loss, causing housing stress or even homelessness, may heighten. According to research in Australia and the UK, the risk of mortgage default is enhanced when a home purchaser experiences periods of unstable employment, has a single/part time or casual income, becomes divorced or must provide for a high number of dependants. Vulnerability may increase when caring for the young, taking the first steps from the parental home, during unemployment, when divorced, elderly or disabled. It may also occur at certain stages of the business cycle when housing costs may rise beyond capacity to pay. Further, the level of mortgage arrears is also important, as well as factors such as high loan to value ratios, unexpectedly high mortgage interest rates, and regional market variations.
Multiple perspectives and experience of risk

As suggested above, the risks influencing decisions about the consumption of housing are embedded in time and space. Beyond consumption, different types of risks and risk averting behaviour may also influence other aspects of housing provision: namely the finance, production and allocation of dwellings. Towards this end, it is helpful to view housing as being embedded in a solution, of connected, reinforcing and/or conflicting relationships; involving actors operating in a specific environment and time. From this perspective, it can be appreciated that different agents involved in various dimensions of housing provision will be subject to their different, dynamic and uneven interpretations of relevant risks.

Institutions offering mortgage finance to home purchasers face the risk of mortgage arrears and eventual non-payment of the borrowed sum. This risk may be reduced where the land title, a cash deposit or other valuable assets are committed as security. Borrowers can be required to privately insure their capacity to pay. Further, governments may establish guarantee funds to reduce potential risks to financial institutions of lending to lower income households.

The estimation of opportunities and threats plays a cumulative role influencing the actions and in-actions of agents. Consider the role the estimation of risk plays in the family plans of home purchasers, investment strategies of housing associations, election campaigns (including housing manifestos) of political parties, lending criteria of financial institutions and the design of instruments by mortgage guarantee funds.

The calculation of risk may or may not be informed by adequate information or ‘hard facts’ but rather estimation, impressions and even ignorance. The study by Gruis (2002) examines the increasing importance of financial continuity amongst Dutch housing associations and argues the need for a more informed rational decision-making based on the collection and interpretation of data. The necessity for financial self-reliance requires associations to actively protect their income stream (rental, investment revenue) in a way that anticipates market developments, likely expenditure, maximises yield from investments and minimises vacancies. This necessity has stimulated interest in the risk assessment processes associated with asset management for housing associations.

Yet, according to 6 (1998), risk perception is not perfectly rational, but culturally defined. Certain risk cultures evolve which may be risk accepting or minimising. These cultures have been categorised by 6 (1998) as individualistic, fatalistic, isolated, hierarchical or egalitarian. Different risk cultures may pervade political ideology and influence the policies and actions of executive government. Meen (1994 in 6, 1998) elaborates the kinds of risk policy makers may consider, directed towards specific housing outcomes such as individual well-being, community safety, and the housing industry. Further, political parties may view certain policy statements or actions as being more risky than others, in terms of legitimacy and electoral support.

Risk and rational decision-making

The emergence of norms and institutions based on notions risk and trust has been explained from an individualist, rational choice and exchange perspective, which derive from neo-classical economics (Olson, 1965) and behavioural psychology (Simmel, 1955).
Rational choice theory implies that members of a group, community or society act individually or collectively in order to maximise their own personal utility (Somerville, 1999). People compulsively make decisions, in a competitive environment, which maximises their desired value and potential rewards. Collective choices are made to minimise individual costs and maximise group advantage, spreading costs more thinly amongst group members (Ostrom, 1990). The common resource pool over which struggles occur defines the context of choice and value. In this way rational choice theory, with its maximisation of value, minimisation of cost and context-defined value, aims to explain the social relations guiding individual and collective behaviour.

Terhorst and Van de Ven (1997) and Somerville (1999) elaborate several key themes in the rational choice approach: the need for boundaries excluding and including people in the group, establishing members’ right of access to resources, their obligatory contributions and preventing free rider access. Rights and obligations may reinforce uneven access to power resources, where weaker members of a group have less to offer the collective pool of resources and therefore suffer from diminished access. Sharing of costs may redistribute some benefits to weaker members, where this collective action reduces individual costs. Co-operative action, the distribution of resources and performance of certain duties, is established when reciprocal individual benefits are clear to participating members.

Societal forms can be considered to be a cumulative outcome of rational individual and collective choices. This perspective has prompted complex construction of behavioural models, applying ideas from game, exchange, and strategic interaction theories (Jary and Jary, 1991). Such theories have come under severe criticism from critical realist sociologists, who argue that they do not consider the vital process of making choices (or non choices), their material and social construction. They argue that ‘rational actors’ are treated in isolation, aggregated and thereby stripped of influential contexts in which they operate (Archer and Titter, 2000).

Does the use of risk in housing research assume perfect or bounded rationality? No according to Sommerville and Bengston (2002) who demonstrate the application of rational action theory to the field of housing studies which

> assumes that actors operate on the basis of ‘thin’ rationality, where the context of their action has a crucial effect on the decision and choices that they make (2002:23).

**Source of risk, severity and the degree of control**

The housing sector is vulnerable to influences outside its immediate or core network of operations. Changes in interest rates, rising land, building and labour costs as well as unemployment all hold indirect but important implications for housing provision. The actions of individuals within the finance, property and labour markets may hold important ramifications for the definition of various influential dimensions contributing towards a housing solution. According to Croft (2001), risk may emanate from the individual agent themselves, their partners for action, the actions of contingent others, or cumulative actions of externally related agents, as well as natural events influencing all or some relevant agents.
The source and severity of risk can be allocated across two intersecting continua: depth and breadth: acute – chronic and systematic - individual risk (6,1998). The power to secure oneself against the different types of risk, including those that are acute and individual, varies between different agents in the housing network over time. Importantly, agents do not have uniform powers and resources to control the circumstances influencing housing related risk and thereby ensure the certainty of outcomes. For example, the risk of a tenant’s eviction may be minimised during a slack rental market, whilst a tighter housing market may permit the landlord to raise rents without generating vacancies.

Indeed, the perception of risk also relates to the degree of control over important contingent circumstances. These include market conditions, institutional conventions, income levels and security, personal relations, health and the availability of social protection (Ford et al, 2001). Housing choices may be made on the basis of the perceived availability of resources such as a stable, sufficient and secure income, the provision of which may be beyond control of individuals, whilst being of great personal significance. Indeed, opportunities in the labour market, interest rate policy, social welfare provisions, and fiscal rules all provide a source of personal risk and opportunity but are largely beyond the control of individual agents.

**Allocation of risk and the asymmetric organisation of trust**

A common theme throughout risk related housing research concerns the distribution of risk via state/market institutions and the individual (employment, class, gender, ethnicity, life course).

In particular, an important aspect of research on home purchase concerns the movement of financial risk from the collective to the individual via promotion of home ownership, withdrawal of state mortgage protection schemes, compulsory mortgage insurance and mortgage guarantee funds (Croft, 2001:737). It is argued that risks have been accumulating amongst housing consumers in the context of increasing deregulation of labour markets, polarisation of incomes, reliance upon part time and temporary work, relationship breakdown and reduced role of government in mortgage relief, dwelling allocation and social housing provision (Ford et al, 2001).

An important related phenomenon is termed the ideological ‘individualisation of risk’, which demands self-sufficiency and responsibility for managing one’s own housing needs and risks and less dependence upon universal, redistributive state centred strategies. Social insurance, which may guard against housing related risks, is also shifting towards user pays pension contributions, and away from collectively funded and redistributed social provisions. Further, the increasing use of market based allocation of housing services, rather than queuing based upon other ‘social’ criteria, is becoming the norm in many countries (Croft, 2001). An argument has also emerged that home ownership is a form of private social insurance (Castles, 1989, Taylor-Gooby et al 1999). Taylor-Gooby et al (1999) argue that the shifting of risk management, from the public sector towards private organisations, actually erodes personal security.

The response to risk, which plays a role in defining the careers, strategies, policies, regulations and instruments developed by individuals and organisations, involves efforts to avert negative risks – and thereby maximise trust. Thus the two concepts of risk and trust can be integrally related. Yet, the capacity and ability to avert risks is far from uniform.
Responsibility for risk minimization and tenure differences

The three points above, concerning the rationality, source and allocation of risk lead us to the question concerning responsibility for housing risks. To what extent can housing agents be held responsible for the actualisation of risks beyond their control and expectations? For example, if the risk of unemployment rests in the hands of corporate directors beholden to shareholder interests in another country, who should be responsible for insuring against the potential loss of income, which may lead to mortgage default? Currently, the borrower may be required to pay a mortgage protection premium, to insure against the eventuality of unemployment. Yet this insurance protects the banks and not the borrower (Ford et al 2001). In a few countries, the state may intervene to address mortgage payment shortfalls, albeit for a limited period or amount, before eventual foreclosure. This contrasts with the situation of renters who may receive generous rental subsidies over unlimited periods of time.

Risk as social theory

The concept of risk has also entered broader discussions on social theory in housing studies. The ‘risk society thesis’, as postulated by sociologists Giddens and Beck claims that greater uncertainty, flexibility and change in social and economic relationships (in the workplace, home and social networks) are shifting risks along new societal lines. As societies modernise, old processes are subject to increasing scrutiny and modification. Traditions fall rapidly by the wayside, old structures and collective institutions recede. Risks, both natural and manufactured, accumulate differentially. The post-traditional society sees risk as emanating from human interventions in the natural world through technology, which may mitigate or generate risks. These risks are difficult to control and expert opinion on strategies to avert them is divided. Overloaded with information, the laypersons’ trust in experts is undermined, eroding the influence of rational reasoning and increasing reliance upon individualised solutions focusing on safety and preventative life strategies, promoting the rolling back of collective welfare state (Taylor-Gooby et al, 1999:179). This post-traditional ‘risk society’ provides more space for individualisation and personal strategy making - and indeed personal risk taking. However, increased and uneven awareness of risk and limited choices distributes social vulnerability in different ways and risks are accumulating amongst the lower socio-economic classes.

The risk society thesis has emerged in property and housing studies (Winter and Stone, 1998, Allen, 1999; 6, 1998; Berry and Dalton, 2000; Guy and Harris, 1997, Ford et al, 2001) concerning shifts in social vulnerability, policy decision-making and property investment. Ford et al (2001) conditionally apply the thesis to examine how risks associated with home ownership have been inserted into individual agency and broader psychosocial change. Using the risk society thesis as a sensitising framework, brings agency and identity to the foreground when examining the process of change. Via extensive empirical research, they examine low-income home ownership in the context of an increasingly complex and uncertain economic environment. Globalisation, deregulation of financial markets, flexibility and insecurity labour, housing market recession and the rolling back of welfare state support all have important consequences which are both quantitatively and qualitatively examined (Ford et al, 2001:6).
3.4.2 The Preferred Concept of Risk

Within this growing realm of risk related housing studies, it is possible to link the concept of risk to the generation of divergent housing solutions.

Agents in the housing network make decisions in an open and dynamic environment. Different agents in the housing process perceive risks relating, but not limited to, the necessary relations to which they are bound. Contingent relations pose perceived risks, which threaten the stability of relations between agents. Decisions to save, build, buy, rent or invest are all made (or not made) in the context of contingent relations. Ever-changing contingent conditions imply that perceived risks also change over time and space. According to Schillmeier "competent actors perceive, (mis-) interpret and construct their world in relation to the changing socio-political context" (1999:174).

To reduce their exposure to risk, agents may co-operate or compete to establish norms, processes, policies and laws that provide certainty and security in housing contracts and transactions. Risks are neither uniform nor responded to in the same manner. Indeed we can find important differences in norms, institutions and contracts affecting land development, housing finance and the consumption of housing services in different housing solutions.

Housing is unique because it involves long term contracts to finance. As mentioned in the very beginning of Chapter 1, housing is expensive, payments are stretched over time and time exposes both borrowers and creditors to risk. Risk reducing mechanisms are often built into mortgage schemes and form part of the architecture of provision.

The following example of tenant-landlord relations illustrates the notion of risk and how these risks may be averted (for some) by the organisation of trust. A tenant’s capacity to pay her rent, in exchange for the landlord’s accommodation, is threatened by her loss of income. She may sign a contract, which she assumes will protect her from eviction under such circumstances, or ensure she has access to adequate unemployment insurance. Alternatively, the landlord may be able to extract payment of rent from her remaining assets and employ his right of eviction. The norms of tenancy and credit are embodied in dominant ideologies, written down in codes of conduct, policies and legislation. These forms of risk-reducing measures are conceived to be the organisation of trust that develops over time and space. Once again, the basic idea is outlined in abstract terms in the following Figure 3.3.
The Figure above is an abstraction from complex reality. In complex, multi-dimensional social life there are many different examples of perceived risks that influence actor’s agency. Generically, the organisation of trust can be said to be outcome of power struggles between agents within the housing network; these interactions become regularised and institutionalised, momentarily fixed in time and space. Such institutions or conventions reduce the chance of unanticipated behaviour and promote a sense of trust. Trust enables a certain assembly of social relations to stabilise and form an actualised housing solution. Long-term solutions comprise a pattern of norms, dominant ideas, processes and organisational structures, which underpin a form of housing provision.

3.5 The Concepts Applied to Housing Solutions

This section is devoted to the elaboration of Figures 3.1 - 3.3. It further defines the types of social relations that may contribute to housing solutions, as well as the type of risks agents perceive and the trust-enhancing norms, processes, and organisational outcomes that may emerge over time.

3.5.1 Social Relations in the Housing Solution

The following paragraphs explore the definition of three necessary relations of provision: property, investment and consumption, in order to demonstrate how they can be differently defined under diverse contingent conditions, emitting a variety of risks for different agents. Further, trust can also be organised and established in a variety of ways. Examples of risk reducing norms, dominant ideologies, and organisational strategies, which may emerge, are also provided. Later, in Chapter 5, it will be argued that these relations and their definition should form a key causal cluster differentiating forms of housing provision.

Property relations can be perceived as abstract social relations between people, rather than concrete things, which define the liberties, benefits and costs associated with the ownership and exchange of scarce, useable goods. Property relations imply norms of behaviour between people with respect to ownership, trespass, usage, capturing the benefits from that usage, as well as the right to alter the property or transfer it to another party. In Western societies, such relations are commonly expressed in law and enforced by legal authority (Pejovich, 1990: 27).
The property relations underpinning the residential development of a city, region or nation play an important role in the form and distribution of housing outcomes (Badcock, 1984). They define the rights of possession, use or development, and may specify how the rewards or costs of occupation, use, or exchange should be allocated. A number of contingent relations may influence the actualisation of property relations between owners of land and residential developers. These are listed below.

Contingent relations influencing the definition of property rights may include:

- Location of land, accessibility to end users, existence of related infrastructure.
- Land tenure: leasehold or freehold.
- Certainty and flexibility of land-use or zoning rights: relative value of existing and potential uses.
- Cost of developing land, availability of materials, suitability for development.
- Costs associated with land holding: taxes, levies, maintenance or transferring property rights.
- Exclusivity of land title: undisputed ownership or threat of repossession.
- Land value: inflating, stable or deflating.
- Competition, collaboration, or monopoly position of landowners or purchasers.
- A secure, long-term method of financing purchase.
- Capacity to repay the loan, the prospects of return and rising land value.

Risk-reducing strategies employed by relevant actors may include:

- Clear system of land survey, legally enforceable system of ownership, undisputed occupation rights.
- Right of compulsory purchase or repossession to meet ‘public interest’ goals.
- Laws permitting the collection of betterment tax on unearned increment in property values.
- Efficient and cost-effective system for transferring ownership.
- Price regulation and compensation based on former usage.
- State-subsidised infrastructure provision.
- Land use planning clearly defined, long term, and protective of property values.
- Monopoly selling or buying strategies.
- Maximising formal and informal influence upon land use defining agents.

Whilst fundamental to the system of housing provision, property relations do not exclusively define housing tenure and urban form. The financial relations of housing provision also play an integral and influential role in housing outcomes. Housing is costly to produce. Developers and purchasers of housing, whether they are voluntary, private or state institutions, often require the use of borrowed capital to purchase land and materials, or the labour required in order to complete, maintain or refurbish a particular dwelling. In return for capital, the lender or investors (joint venture partners, governments, public banks, retail banks, foreign banks, building societies, merchant banks, insurance companies and pension funds) will require a defined schedule of instalments or dividends. A wide range of contingent relations, as indicated below, defines the actual processes of housing credit provision.
Contingent relations influencing the definition of financial relations may include:

- Interest rate conditions.
- Existence of lenders offering favourable terms and conditions.
- Competition, collaboration or monopolisation of credit providers for particular segments of the housing market.
- Lending criteria, portfolio policies, services offered and territory of operation (including 'red lining').
- Risk-return ratio of housing investment relative to other forms of investment, which influence the volume of credit available.
- Desired liquidity and mobility of investment.
- Perceived credit worthiness of borrower, existence of desired security.
- Existence of a range of financial products providing borrowers with a competitive choice.
- Degree of integration of lenders with other components of the housing network such as mortgage lending, land banking, infrastructure investment, residential construction, retail development, etc.

Risk-reducing strategies employed by relevant actors may include:

- Fixed interest rates, monetarist policies, interest rate subsidies.
- Techniques for assessing credit risk and risk-avoiding conventions.
- Promotion of certain financial management norms, values, processes and standards.
- Promotion of practices supportive of maximising of property values and rents.
- Right of repossession over the property or other assets of the borrower.
- Demanding an equity share in the development or defined share of the profits.
- Security funds to protect investors from defaulting borrowers.
- Government policy regulating the system of credit provision.
- Cross-national treaties defining borrowing limits of governments.
- Subsidies to channel investment into particular sectors.
- Mutually reinforcing lending strategies, land banking, or company directorships.
- Establishment of savings clubs and building societies.

The way housing is 'consumed' not only relates to property rights or investment mechanisms, but also to the system of labour relations and welfare provisions affecting the consumption of housing services, which emerges over a long period of time (Castles, 1998, 1988; Kemeny, 1992; Therborn, 1989). Family members, social networks, the wider community, as well as private, voluntary or state institutions may provide housing assistance (Kemeny, 1992). As indicated below, a wide range of contingent, exogenous relations may influence the system of labour and welfare and ultimately housing consumption.
Contingent relations influencing the definition of labour and welfare relations may include:

- Economic value of skills possessed by members of household as determined by the labour market or prescribed by the state.
- Gender relations within a household allocating participation in paid work.
- Economic relations within the household and wider community networks.
- Existing labour-market norms, including discrimination against older men, migrants or married women in times of job scarcity.
- Informal or formal support services, such as affordable or free child-care.
- Economic policies of government regulating job growth, wage levels; such trade-offs and conditions that influence the ability of households to consume certain housing services.
- Role of labour organisations in promoting certain forms of housing production and services.
- System of social security, which may or may not cover ongoing housing expenses following retirement from the paid workforce.
- Role of welfare organisations in diverting collective resources to or away from housing-related support.

Risk-reducing strategies employed by relevant actors may include:

- Wage indexation, agreements and more general accords to regulate income levels and working conditions.
- Income transfers to maintain a certain level of purchasing power amongst households.
- Housing allowances to assist payment of housing costs.
- Rent regulations to reduce or sustain a certain level of housing costs.
- Income and life insurance

The above selection of relations: property, financial and welfare, as well as their contingencies and risk-reducing strategies, should not be perceived as an exclusive, isolated or fixed set of relations. Nevertheless, in Chapter 5 a more elaborate argument will be made as to why these and not others should be the focus. Further, as stressed in the previous section, clusters of conflicting necessary and contingent relations underlie urban form, the organisation of housing production and the type of housing services consumed. These relations interact with one another in a way that is causally significant and therefore, they cannot be conceived in isolation. Finally, as illustrated above, the state plays an integral and contested role in the definition of these relations. For this reason, analysing the role of the state is an important element for explaining change and difference in housing systems.
3.6. Comparing Housing Solutions

As stressed throughout this Chapter, a well-developed ontology of housing systems provides an important foundation for explaining differences between them. Combined with a defined logic for gaining further understanding of housing systems, a coherent methodological package should also inform the data collection and analysis strategy. Two relevant issues are considered below: the level of comparison and the problem of time and space.

3.6.1 The Level of Comparison

Informed by critical realism, forms of housing are perceived in terms of experienced reality, actual housing institutions, and underlying social relations which form causal clusters of generative necessary and contingent relations.

A comparison of experiences or perceptions can be a useful starting point for a more comprehensive explanation. Such studies try to account for differences by analysing the formative constraints influencing perception. Yet, such a comparison will only highlight differences and cannot explain them.

At present, ‘event level’ analysis dominates cross-national housing research: comparing policies, regulatory mechanisms, allowances, investment levels and management models. Given the pragmatic aims of government-commissioned research, often with tight time-lines, such research can lead to isolated descriptions of current policies rather than comprehensive explanations for the differences between them.¹⁰

More explanatory research should promote the comparison of underlying causal mechanisms that generate differences between housing systems (Terhorst and Van de Ven, 1997; Therborn, 1989; Harloe, 1987, 1995, Dickens et al. 1985) and indeed understand why policy transfusions, from one country to another, are often rejected by the host.

3.6.2 The Problem of Time and Space

Any period of history chosen at random reveals uncertainties, and the modern age is decidedly no exception. Society is more complex than ever before, and is constantly in motion. (Klien, 1975:viii)

More reflective academic studies¹¹ have established a clear trend away from static, atomistic policy comparisons towards more contextualised, historical approaches, which aim to explain difference in housing systems (Bourne, 1990). However, comparative explanation through analysis of event chronologies continues to be problematic. Whilst researchers have

¹⁰ Kleinman (1996) makes the point more forcefully:

'which [countries] have the best policies?'... often seems to lurk around the corner in comparative studies (particularly those funded by national governments) is intellectually a dead-end. Trying to determine which country has the 'best' housing policy is an utterly fruitless exercise (ibid, 1996:16).

recognised the significance of events and their explanation in context, the treatment of time remains somewhat of a puzzle.

The answer lies, once again, in the level of comparison. It is considered helpful to postulate a feasible preliminary model of causal relations, which uniquely underlie each case for comparison. The packaging (and re-packaging) of causal relations tends to emerge over a long period of time. Retroactively, this package should be postulated, tested and revised to capture the multi-causal, contingency basis of housing solutions (Steinmetz, 1998:174) in time and space. Once a model of causality sufficiently explains empirical reality in a single case, comparison can be made at the level of causal mechanisms with other cases. This process prompts the researcher to define what is distinctive about each country and, in particular, explain why differences have emerged.

Thus, comparison over time is a process that occurs within, rather than between, the case studies. It enables the researcher to define the clustering of necessary relations, the role of contingent conditions and the direction and nature of change. Comparing patterns of housing events or housing histories, such as policy developments, population growth, or house prices is illuminating when the reasons for difference or change have also been analysed.

3.6.3 Comparing Two Housing Solutions – The Netherlands and Australia

The Netherlands and Australia are often respectively categorised as 'Old' and 'New' World advanced capitalist countries, with different modes of welfare provision underpinning their social and economic development (Castles, 1998). The Netherlands, with its relatively strong welfare state and social rental housing, is contrasted with liberal and laissez faire home owning countries such as Australia. Contrastive comparisons are easy to make. Figures comparing state expenditure, tenure forms and housing subsidies have become more widely available with the establishment of multi-national, regional and global organisations such as the OECD, United Nations, World Bank and European Commission. However, broad-brush, empirically driven and often normatively based comparisons tend to polarise and categorise, rather than provide a considered explanation of difference.

The proposed comparison of difference and change in the housing solutions of the Netherlands and Australia seeks to highlight and explain, rather than merely emphasise the observable, obvious distinctions. It is contended that the roots of explanation can be found in the unique configuration of necessary and contingent relations present in each country: the underlying package of causal relations generating distinctive housing solutions.

The purpose of comparing the Netherlands with Australia is to demonstrate the value of comparisons that recognise the structural coherence and embeddedness of two distinct housing solutions. It will be argued in subsequent Chapters that a unique cluster of property, investment and savings and labour and welfare relations has been mediated by each state in radically different ways in the Netherlands and Australia.

The Dutch solution of social rental housing and urban containment has emerged over a very long period of time. It stems form the granted role of municipalities in land allocation, the role of the state in channelling housing investment, the fragmentation of labour relations and pillarisation by religious affiliation, and the strong perceived link between housing costs, wages and international economic competitiveness. In contrast, the Australian solution has
centred on land speculation fuelled by the prospect of urban expansion, underpinned by state-financed infrastructure provision and, until recently, a protected circuit of capital supporting affordable, individual home ownership for working households.

Considerable differences can be found in several key social relations, which intersect with and underpin the housing systems in both countries, notably the relations affecting property rights, investment and savings and labour and welfare. For example, the institutions, market conditions and dominant ideas surrounding property rights affecting land use, development and urban form are fundamentally different in the Netherlands and Australia. Also the flow of investment into low and moderate-income housing has taken radically different routes supporting the production of very different housing tenures. Further, the interaction of labour relations affecting wages with tenure, welfare and broader economic relations also differs in significant ways. Closer analysis of the development and interaction of these relationships is considered a fruitful pathway towards explanation of difference.

The study proposes a comparison between the shifting housing solutions of the Netherlands and Australia during the 20th century. The approach, outlined below, aims to make a critical contribution to conventional explanations by contrasting the packaging of necessary relations that exist in both countries and undertaking detailed research to establish their validity (Harloe, 1991:129-130).

The Dutch and Australian housing systems have experienced a number of internal and external influences throughout their development. These influences have been internalised within the housing solution in different ways. Their responses are tied to the causal relations and sustained by path-dependent behaviour. Thus, whilst major changes may take place, traditional ideas and processes may continue to persist (in the short or long term). Analysing this process of change and contrasting various periods over time will highlight the relative 'stickiness' of particular generative causal mechanisms in each country and suggest prospects for the future.

To highlight the significance and robustness of causal clusters underlying the different 'solutions' a long trajectory of development will be examined, which extends from the mid 19th to the end of the 20th century. This trajectory encompasses various phases of adaptation, coherence and crisis, leading to the emergence, establishment, acceleration and decline of specific housing solutions emergent from the repackaging of relations underpinning distinctive forms of housing tenure and urban form in each country.

Figure 3.4 outlines the comparative strategy as follows. It is postulated (p) that the necessary social relations of labour and welfare (L), investment and savings (I) and property (P) have been differently 'packaged' and mediated by the state (S) in the Netherlands (N) and Australia (A). The research process analysing the necessary and contingent relations underpinning each period helps to revise and refine (r) the initial postulated cluster. Comparison of refined clusters provides the basis for explanation of difference between the two case studies.
Figure 3.4 The comparative approach. - refining postulated causal clusters through historical research and comparing refined causal clusters as a basis for explaining difference

Having postulated the causal boundaries influencing the development of housing systems in the Netherlands and Australia, it will be possible to put forward an empirically grounded, theoretically informed explanation of how these causal clusters have influenced the processes of housing promotion, production and allocation within each housing solution. In particular, the different low to moderate income housing solutions of compact social rental housing and low-density home ownership can be contrasted and understood towards an explanation for divergence.