

Asymmetric information, critical information and the information interface

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Abstract

This article suggests that information issues in economics have been misunderstood because they have been approached as modifications to the neoclassical assumption of perfect information. The idea of 'asymmetric information' has been for the most part accepted as accommodating information issues without terminal damage to the neoclassical model. To those outside the neoclassical theory group, disparities in information and the advantages they imply are taken for granted. With the theory of support-bargaining and money-bargaining it is shown that information plays a much wider and more crucial role in social and economic intercourse. An 'information interface' forms the focus of economic exchange and the evolution of economies. This interface is itself a product of social and economic bargaining processes. While Joseph Stiglitz makes clear the destructive implications of asymmetric information for neoclassical theory, he still chooses to work within the neoclassical framework, rather than pursue a wholly new paradigm. Yet he recognises that an evolutionary theory of economics is required.

It was suggested in an earlier article for the Real-World Economics Review (Spread, 2012) that much of the mainstream economics of the twentieth century was devoted to reconciling the mathematical model of neoclassical theory, largely established by the end of the nineteenth century, to observable realities. This work of reconciliation involved modifications relating to asymmetric information, public goods, externalities, companies, consumer choice, market failure, rational expectations, transaction and contracting costs, information management, economic rent, the role of entrepreneurs, 'characteristics' of products, uncertainty and risk, demand deficiencies, and stock market behaviour. The modifications related very specifically to the neoclassical model. The neoclassical theory group had itself established the misconceptions that needed reconciliation. Outside the theory group the need for reconciliations did not arise because the observations that prompted the need for reconciliation with the neoclassical model were largely matters of commonplace acceptance.

Support-bargaining and money-bargaining

This article is written on the basis of a theory of support-bargaining and money-bargaining. The following is a summary of the essentials of the theory. Further work on the subject is listed in the references at the end of this article. A full list of publications to the end of 2012 is given in the World Economics Association Newsletter No. 69, December 2012, p. 4.

The primary concern of individuals is self-preservation. In response to any sense of insecurity, humans seek the support of those around them. They adapt their opinions and behaviour to obtain the support of others. At the same time, they retain selfish individual impulses. The outcome is a process of 'support-bargaining' (SB) by which individuals obtain the support they need with as little compromise of their own interests as possible.

SB takes place in social, political and intellectual spheres. In the political context, it implies what is in effect a 'support convention' whereby support substitutes for violence. A 'democracy' is a support-bargaining society. In the intellectual context, SB gives rise to theory-formation.

Support is an imprecise bargaining counter. Support-bargaining is often ambiguous. To deal with material exchange SB has created 'money' as a bargaining counter. Being material, divisible and precise it is well-suited as a bargaining counter involving in particular the exchange of material things. 'Money-bargaining' (MB) is exchange using money.

In both SB and MB agents select by reference to situation. Consumers, for example, form 'bargaining sets' comprising products that fit their situation and select the best fit from the bargaining sets.

The 'situation' includes a budgetary situation. Bargaining sets are constrained by budgetary situations.

Organisations are understood as bargaining agencies. They combine inputs to give strong bargaining positions. Companies are understood as specialist MB agencies. They are generally the strongest bargaining agencies of MB systems. They combine inputs to create and deliver attractive products or services. They also contrive to limit competition to themselves.

Companies 'format' so that, as a minimum, their revenues cover their costs. Unit costs, production, prices and sales must be established in such a way as to meet the viability condition. The four variables are interdependent. Technology of products and processes plays a major part in the establishment of viable formats.

Location can play an important part in the achievement of viability. Unit costs can be reduced by good location, and competition can be attenuated.

Agents of bargaining systems all seek to advance their interests by purveyance of information. SB and MB create an information interface in which SB and MB is carried on. The media are important agencies of SB systems. In an MB system, advertising companies specialise in the purveyance of information on behalf of other companies.

Situation determines requirements of the agents of SB and MB systems. It also determines what they can provide, since 'situation' incorporates the idea of 'capacity.' An individual's situation incorporates a capacity to perform certain tasks. A company's situation similarly incorporates capacity to provide certain goods and services.

The situation-related selection processes of SB and MB mean that the whole system evolves over time from situation to situation.

MB systems require infrastructure, education and extensive protection of agents against false and misleading information. The growth of an MB system depends on effective promotion and regulation through the SB system.

It will be apparent that the idea of SB and MB involves a quite different dynamic from that of neoclassical economic theory. Major points of difference may be summarised as:

Agents of an MB system build bargaining positions, involving many considerations in addition to price.

Product differentiation is a major factor in the building of bargaining positions. Products are developed to fit into the bargaining sets of buyers.

MB is concerned with exchange, rather than the allocation of resources. Resources are absorbed as required and as available.

People are conceived as agents of MB systems, rather than a resource.

Companies are specialist MB agencies, and not the small processors of resources of neoclassical understanding.

The company viability condition involves unit average costs, rather than marginal costs, and the interdependence of sales, price, unit costs and production.

Technology is of central importance to the viability of companies.

Location is often a critical factor in the viability of companies.

There is no 'perfect information.' Information is provided by the agents of an MB system to advance their interests. The information interface is used to build bargaining position.

Valuation and selection is by reference to situation, rather than by reference to marginal utility or marginal preference.

Space and time constitute components of situation. Bargaining sets are constrained by these elements of situation.

Part of a reference situation is the budget situation. Budgets reconcile time disparities between revenues and expenditures. Neoclassical theory has no concept of this function of budgets.

Companies set prices by reference to unit cost, adjusted in accordance with bargaining position.

While the neoclassical system is conceived as self-sufficient, an effective MB system requires extensive state engagement. SB and MB implies a 'political economy.'

States are extensively involved in MB through their budgets, though budget management is a matter of SB. States also provide infrastructure, education, regulation and other services necessary to an MB system.

'Money' is the bargaining counter for an MB system. Money is a creation of SB and requires continued management through the SB system.

MB implies an evolutionary process, rather than reversion to equilibrium.

The idea of asymmetric information addresses one of the most essential but also one of the most surreal assumptions of neoclassical theory – perfect information. An important impulse in the creation of the neoclassical model was the aspiration to match the status of knowledge in the social sciences to the status widely accorded to the knowledge of the natural sciences, and in particular that of physical science. Mathematics appeared to be the key to unlocking the secrets of the physical world, and it seemed reasonable to suppose that it might be the key to unlocking secrets of the economic world. The concern of economics with physical 'products' gave an immediate affinity with the subject matter of physics, suggesting that the adoption of the distinctive tool of physics might be utilised successfully in economics. The natural sciences had not found it necessary to assess the implications of the process of their own observation, so there seemed no reason why economic theorists should burden themselves with such complications.

Such complications were further avoided by focussing economic attention primarily on a natural scientific objective rather than on human behaviour. The neoclassical model was concerned with the optimal allocation of resources. Human nature and human interest were of secondary concern. They were regarded as adequately reflected in the idea that humans as workers would maximise their incomes, as consumers they would maximise their utility, and as owners of land and capital they would maximise their returns. Human nature and human interest were simple and self-evident.

These preconceptions made the ordinary course of buying and selling a simple process. People buying, for example, wheat, a chair or a bicycle could observe, inspect and test what was on offer and if it met their requirements of utility, or ranked high enough in their preferences, then they paid the seller for it. The seller had only to produce and present items for sale on 'the market'.

Complications naturally arise when the product and process are not that simple. In the 'market' for health insurance, for example, the seller cannot just present his product for sale at an established market price. In a simple product sale, the buyer gets a product and the seller gets money. In the case of health insurance, the buyer gets relief from risk, but the seller gets

risk, as well as money in the form of a premium. The seller is taking on a risk, and needs to know the nature of the risk before he can set a price for taking it on. The nature of the risk depends on the health situation of the buyer, so the seller needs to know the situation of the buyer – his or her state of health. A seller of health insurance will commonly require that a client fills in a form giving details of current and past medical conditions and treatments, as a means of ascertaining the health situation of the buyer.

A buyer knows his or her own state of health, and knows the terms of the insurance will be affected by his or her state of health. If he or she records bad health and much medical treatment on the form, he or she will face a high premium for health insurance. Declaration of certain conditions may mean that health insurance is refused altogether. Furthermore, the worse the buyer's health, the more he or she is likely to want health insurance, and the more he or she will be inclined to withhold information on the form, or even provide false information. There is great scope and great motivation for the buyer to misrepresent the degree of risk that he or she wishes to transfer to the seller. The seller is, at the same time as he or she sells insurance, acquiring risk, with potentially large costs.

These circumstances are understood as a state of 'asymmetric information', a state most extensively investigated by Joseph Stiglitz (esp. 1985, 2000, 2005). The term originates with George Akerlof's study of the market for cars. Akerlof's mathematical model (1973, pp. 489-92) contrasts a state in which a seller knows the quality of the car he has to sell, while the buyer does not, with an earlier state in which seller and buyer have the same information. Akerlof identifies the gain in utility arising from the symmetrical state of information, as compared with the asymmetric state. The term 'asymmetric information' has, however, come to be used more loosely for circumstances in which one agent is better informed than another, without contrasting that position with a position of symmetric information. In Stiglitz's account (2002, p. 469) it refers specifically to the 'fact that different people know different things'. The contrast is more with the state of perfect information assumed in the neoclassical model than with a position of symmetric information, in the sense of equal information. The term 'asymmetric information' is then not entirely apt. People having the same information is not the same as perfect information, even if perfect information implies that everyone has the same perfect information. An assumption that people have the same information would be almost as absurd in the real world as the assumption of perfect information. It would hardly be appropriate in a thesis like that of Stiglitz, which tries to take neoclassical theory closer to reality. There seem to be no theories, other than that of Akerlof (1970), that specifically identify or conceive symmetric information as a 'base case', least of all common understanding. The focus on 'asymmetric information' rather than simply imperfect information means that the information issues even within the neoclassical model are not, as Stiglitz (2002, p. 473) recognises, fully covered by analysis of asymmetric information. But more importantly the discussion of 'asymmetric information', conducted within the confines of neoclassical theory, fails to deal with the information issues of the real world.

The retention of the term 'asymmetric information' for circumstances which it does not accurately describe is perhaps attributable to its ready appeal. Symmetry is, after all, important, though its social importance is little researched.¹ The term has been highly effective in attracting attention to the problem of information in neoclassical theory. But the real-world importance of information lies not in the breaking of any supposed symmetry, but in its role in a much broader dynamic where relevant information is of paramount importance.

¹ On the role of symmetry in society, see Spread, 2013, Chapter 10: Social Symmetries.

The theory of support-bargaining and money-bargaining offers an explanation of this wider role. In the previous article (Spread, 2012, pp. 41-2) a brief account was given of this theory.² The box above provides a short introduction. Individuals are conceived as adapting their opinions and behaviour to those of their associates in order to acquire the support that is essential to their sense of physical and psychological security. Money-bargaining derives from support-bargaining, using money instead of support as the bargaining counter. One important feature of the theory is that, instead of a simple theory of consumer 'utility' or 'preferences', it suggests that the agents of bargaining systems judge their interests by reference to their situations (see also Spread, 2011). Thus in political support-bargaining, politicians will base their economic policy proposals on the current state of an economy. In money-bargaining, consumers buy chairs that fit the rooms of their house, bicycles that fit their patterns of movement and clothes that will fit their bodies and social situations. An employer will assess the current situation or capacity in his or her company and recruit to fill the gaps. Under this conception, consumer 'utility' is understood in terms of fit to current situation, and consumer 'preference' is determined by reference to an existing situation. Consumers 'fit' acquisitions to their situation, as a chair may fit nicely into the living room, or a bicycle may relieve the difficulties of a situation in which walking is the only available means of short-distance transport. If there is symmetry of information, it is that of each person knowing their own situation – one of the basic patterns identified in the theory of support-bargaining and money-bargaining. People may also be understood as identifying their preferences in relation to their situation on the basis of a sense of symmetry – the chair fits nicely in the living room on the basis of a sense of symmetry (Spread, 2013, pp. 244-5).

The client for health insurance is then responding to his or her situation. Health is at risk, and the consequences of health failure are costly. The worse the situation, the more insurance is needed for relief. A seller of health insurance is offering to take on some of that risk for a fee. But before the seller will take on that risk, or acquire that risk, he or she needs to know the extent of it. He or she needs to know the situation regarding the health of the client.

Asymmetries of information in the sense defined above (Stiglitz, 2002, p. 469) are not necessarily any great problem. For the most part, the holders of information that is necessary to the conclusion of a transaction will readily provide it. Forms are mostly filled in. Clients for health insurance will mostly provide a record of their health. A person applying for a job will readily provide information about their situation and capacities where they know these are likely to meet the requirements of the position on offer. If their capacities do not meet the requirements of the position, they will probably not apply.

The problems arise with information that is potentially detrimental to the interests of a client or applicant. A client for health insurance may decide that a high incidence of diabetes in their family is not relevant to their own application for health insurance. Yet in the eyes of the provider this may constitute vital information for the assessment of the risk they are taking on. It may make a significant difference to the premium charged on the insurance. Some information may be critical, in the sense of determining of itself whether a transaction can be agreed or not. A client for health insurance who has had a heart attack in the past six months may know that disclosure of such information will result in a refusal of insurance. He or she may nevertheless choose to withhold that information to get a certificate of health insurance, hoping perhaps that the truth will not emerge even when a claim is made, or perhaps to use

² For further account of support-bargaining and money-bargaining see Spread, 2013. For earlier references, see World Economics Association Newsletter No. 69, December 2012, p. 4, <http://www.worldeconomicsassociation.org/files/newsletters/Issue2-6.pdf>

the certificate in some other context, such as a job application. Asymmetric information of itself is only important if you have been so unwise as to assume perfect information. The real-world problems of information arise with the withholding of relevant, vital or, most particularly, critical information, where relevant information is information that might or will affect the terms of a transaction, vital information is information that will certainly affect the terms of a transaction, and critical information is information that might of itself make or break a transaction.

The acute problems arising with the provision of health insurance have their origins in the nature of the 'product'. Health insurance is defined almost entirely by testimonial information. Epistemologists understand knowledge as deriving from different sources: perception, introspection, memory, reason, and testimony (Steup, 2014). None of these provides wholly dependable knowledge, but we tend to attach greater credence to knowledge derived from perception than to knowledge derived from testimony. That is, we tend to accept 'the evidence of our own eyes', but we know people can lie and dissemble. Things like wheat, chairs and bicycles can be evaluated on the basis of perceptual information. But health insurance is provided on the basis of testimonial information.

The associated or second problem is that an essential part of the testimonial information that defines the 'product', or defines the transaction, has to be derived from the buyer. While in normal monetary transactions the buyer buys in accordance with his or her assessment of his or her own situation, in health insurance the seller is acquiring risk that is contingent on the situation of the buyer. Testimonial information defining the transaction has to be derived from the buyer, and the buyer has a clear interest in providing information that will influence the terms of the transaction in his or her favour.

In the case of health insurance, the market is created by testimonial information. Without such testimonial information, it would not be possible to buy and sell health insurance. With transactions so heavily dependent on information, the quality of available information naturally becomes a major issue. The risks of the market contracting and even closing down altogether if information proves to be inadequate are apparent. Given the obvious temptations for buyers of health insurance to provide misleading and even false information, the prospects of market extinction seem strong. Health insurance only continues to be sold because the industry has been able to establish sufficient safeguards to reduce the risks associated with false or misleading information to manageable levels. The greater part of these safeguards derives from legislation established through support-bargaining systems. Failure of a buyer to disclose vital and critical information will mean that a risk has been transferred to a seller of insurance under false pretences, and any insurance contract will be invalid.

Asymmetric information of itself is a concern of neoclassical economists because it challenges one of their most essential assumptions. But most of the asymmetries of information are readily resolved through transmission of information by agents with an interest in ensuring that their counterparts possess all the information that is likely to further a transaction. Real world problems remain in the potential withholding of relevant, vital or critical information that is detrimental to the interests of the holders of such information. In the real world, it is commonplace that some people will be better informed than others in transactions, and that they may take advantage of their superior knowledge. The general remedy is that noted above in the context of the provision of health insurance. Legislation is established through support-bargaining systems requiring disclosure of information relevant to transactions, with a transaction potentially void if the disclosures are not made. These are, of

course, measures established outside a strictly economic system, but it is only the neoclassical theory group that sustains the notion of an economy functioning independently of social and political processes. The idea of support-bargaining and money-bargaining understands them as inseparably interlinked. It is the interlinking, giving rise to the protection against risk in money-bargaining that is so very apparent in health insurance, that has made money-bargaining so extensively viable and made possible its spectacular evolution.

Credit, employment and 'lemons'

Stiglitz (cf. 2002, pp. 469-70) frequently illustrates his theory of asymmetric information by reference to the provision of health insurance, provision of credit, recruitment for employment and the car market. He remarks (Stiglitz, 2002, pp. 469-70):

Much of the research I describe here focuses on *asymmetries* of information, the fact that different people know different things. Workers know more about their own abilities than the firm does; the person buying insurance knows more about his health...than the insurance firm. Similarly, the owner of a car knows more about the car than potential buyers; the owner of a firm knows more about the firm than a potential investor; the borrower knows more about the riskiness of his project than the lender does; and so on.

The provision of credit involves similar considerations relating to risk as are present in the provision of health insurance. What is provided is defined entirely through testimonial. The provider acquires risk that is contingent on the situation of the client. The problems lie in potential withholding of relevant, vital or critical information known only to a client for credit and detrimental to his or her interests. The problem has exercised providers of credit since credit began. It has significantly inhibited the growth of banking services. For centuries credit tended to be available only to those who had some personal or social connection with the provider (Mokyr, 2011, pp. 220, 224). This meant, in effect, that in the absence of a political support-bargaining system capable of establishing and enforcing protection for providers of credit, the social support-bargaining network was used to provide protection. Clients guilty of providing false or misleading information would lose the support of their social group. Legislation and effective enforcement of legislation – that is, the formal political support-bargaining system – has increasingly protected providers of credit and permitted the widening and deepening of credit provision.

With regard to recruitment for employment, positions are reversed. Sellers of services under employment – applicants for employment – know their own situations and are in a position to withhold information relevant, vital or critical to the employment from the buyer. The buyers of employment services assess the situations or capacities of their companies and will want to take on employees to fill the gaps. A company may want someone who holds a driving licence, speaks French and is willing to work at weekends. Candidates for the post are likely to be required to fill in a form or respond to questions at interview designed to establish that they have the capacity to provide this sort of service. As noted above, applicants for employment will normally be very ready to provide the information that confirms they have the required capacities. Problems arise only with information that has negative connotations for a successful deal. Applicants may be inclined to exaggerate their linguistic capacities, or may omit to mention that they already have nine penalty points on their driving licence, or may omit to mention that weekend work would only be undertaken with reluctance. The more

desperate an applicant is for employment, the more they are likely to misrepresent their capacity to meet the requirements of the post. Recruiters can nevertheless probe the veracity of information provided. Ability to speak French is easily confirmed. Failure to disclose relevant, vital or critical information can in some cases void a contract. Provision of false information is likely to invalidate a contract. In the context of situation-related valuation and selection, the requirements for information are easily understood and there are common means of gaining essential information that have proved at least sufficient to maintain very large employment markets. The problems can on occasions be acute, but they are quite different to those encountered by neoclassical economists coming to the issue with assumptions of perfect information in an economy wholly removed from any social or political factors.

This requirement that the characteristics of the applicant for employment fit the situation of the employer necessarily limits the scope of competition. A person who fits the requirement of one employer may be of no interest at all to another. Stiglitz, (2002, pp. 470-1) presents his analysis of employment selection in terms of 'ability' alone. The assumption is that all employers want 'ability' and hence there is potentially a competitive market for employment, differentiated only according to different levels of ability. There is market imperfection, but the neoclassical concept is retained. In contrast, buyers in a money-bargaining system select from bargaining sets comprising the goods and services that have features fitting to their situation (Spread, 2008, pp. 78-87). In the above example, the buyer establishes a bargaining set that includes only those who speak French, have a driving licence and can work at weekends.

Health insurance, credit provision and employment form a trio of exemplars for asymmetric information because the 'products' are all defined entirely or very largely in terms of information, and an essential part of the defining information has to be derived from one of the agents involved, who has a potential interest in misrepresentation.

The nature of the 'product' introduces further ambiguities into these transactions. In the case of health insurance and credit, the provider is taking on or acquiring risk, as well as being paid. He or she is plainly acquiring something, as well as providing something. In the case of employment, the applicant is offering to provide services under an employment contract, but wants to receive 'a job'. The potential employer is offering a job. The applicant is offering to provide, but also wanting to receive, while the provider is understood as providing employment, as well as buying services. The two-way flows of risk and advantage, all defined in terms of testimonial information, blur the common distinction between seller as the receiver of money for what is provided and buyer as the payer of money for what is received. It is necessary that the information that constitutes the 'product' meshes with the situations or capacities of the two agents involved. Money can then pass from buyer to seller to settle the transaction.

The fourth exemplar of asymmetric information is the market for cars. As noted above, the term 'asymmetric information' originates with George Akerlof's (1970) account of the market for cars. Akerlof constructed a model showing that under certain assumptions cars of good quality can be displaced in a market by 'lemons', or cars of bad quality. The model assumes two classes of car – new and used – and two qualities – good and bad. It is impossible for buyers to tell the difference between a good and a bad car. People buy a new car assuming it to have a certain quality, but then an asymmetry of information develops, since the owner discovers the true quality of the vehicle. Since buyers cannot tell the good from the bad

quality vehicles, vehicles all sell at the same price, so that whether an owner/seller has a good quality or a bad quality vehicle, he gets the same price. Nor can a used car get the same price as a new car. So, according to Akerlof (1970, p. 489), '...the owner of a good machine must be locked in. Not only is it true that he cannot receive the true value of his car, but he cannot even obtain the expected value of a new car'. So the good cars tend to be withdrawn from the market.

In the extreme, a market can be entirely eliminated by concerns over the quality of vehicles on offer. It is possible to have (Akerlof, 1970, p. 490), 'the bad driving out the not-so-bad driving out the medium driving out the not-so-good driving out the good in such a sequence of events that no market exists at all'. This is shown in a second model based on various assumptions, principally that the demand for cars depends on the price and average quality, and that all traders are von Neumann-Morgenstern maximisers of expected utility. The ambivalent conclusion to the analysis is that (1970, p. 491), '...with price p , the average quality is $p/2$ and therefore at no price will any trade take place at all: in spite of the fact that *at any given price* between 0 and 3 there are traders of type one who are willing to sell their automobiles at a price which traders of type two are willing to pay'.

Akerlof acknowledges that his model lacks realism, but pleads in extenuation that his exposition is for 'ease in understanding' (1970, p. 489) and 'to avoid a diversion from the proper focus' (1970, p. 491). This means only that the assumptions are chosen so that the mathematics shows sellers will withdraw good vehicles from the market. There is no attempt to review the value of the model with more realistic assumptions. Akerlof did not expect his readers to quibble over realism. His mathematical analysis has been accepted as revealing that markets can be extinguished by problems of asymmetric information, though it shows only that such extinction is improbable. Towards the end of his article Akerlof (1970, pp. 499-500) accounts for the existence of car markets and other markets that might be run down by reference to the provision of guarantees, the use of brand names and various forms of licensing and certification. While a guarantee protects the buyer of a vehicle from unidentified defects, it will not affect the withdrawal of vehicles from sale by a seller, as envisaged in Akerlof's mathematical description (1973, p. 489-90) of the extinction of markets, unless the price payable rises with the provision of a guarantee to a level that the seller regards as the true value of his vehicle..

Akerlof (1970, pp. 492-4) suggests that the provision of health insurance is similar to the car market. People may be refused health insurance because they are a bad risk at the premiums prevailing. In this case, however, it is the buyer who holds the information relevant to the transaction, rather than the seller. In the car market, in Akerlof's analysis, the seller of what he knows to be a good car holds off the market because he cannot get a reasonable price for it. In the provision of health insurance, the seller may hold off because the buyer refuses to release information relevant to the transaction. The analogy with the car market would hold only if the buyer of the car had to tell the seller the quality of his car. The requirement that the buyer release information in the provision of health insurance makes the market peculiar in comparison with the car market. It makes apparent the limitations of the analogy with the car market. It also makes apparent the potentials for extinction, or at least contraction. In the car market, buyers may decline to buy cars if they assess the risk of acquiring a 'lemon' as too high. In the market for health insurance, sellers may decline to provide insurance if they think they have inadequate information from buyers to enable them to assess properly the risk they are taking on.

A further important difference lies in the kind of 'products' involved. As was seen above, health insurance is defined in terms of testimonial information, so that failures in the testimonial composition of the product can mean that it is entirely unacceptable. The seller may have no way of acquiring the testimonial information necessary to establishment of the risk he or she is taking on. In the car market a physical object is involved. Consequently there is perceptual information available about the product, and consequently less scope for doubts over information to be so critical as to eliminate a market altogether. Akerlof assumes that it is not possible to know the quality of cars on sale, but although it will not be possible to gain perfect information, it is normally possible to ascertain the condition of a vehicle with sufficient confidence for a transaction to go ahead, with appropriate adjustments to terms in the light of the findings of inspection.

Akerlof's account of the car market assumes that neoclassical market conditions are operative for price formation, in that a single market price is assumed. But at the same time the neoclassical requirement for homogeneous products is breached – cars are distinguished by quality, even though a buyer cannot identify the different qualities. The assumption of homogeneous products is essential to the mathematics of the neoclassical model, and essential to its optimal allocation of resources. As was seen above, in the concept of money-bargaining, buyers form bargaining sets comprising those products or suppliers that provide features fitting to their situation, including their budget situation. One buyer will have a lifestyle that implies a requirement for an open-top sports car, or a vehicle powerful enough to tow a caravan. Another will live in circumstances that imply the need for an estate car or a four-wheel-drive off-roader. Both will be looking for a vehicle whose price can be accommodated within their budget. Both will want a vehicle that is reliable. Certainly neither will want a vehicle with the kind of defect that would mean writing it off after a short time – that is, a vehicle with a critical defect. The presence of most of the features required will be apparent even from casual inspection – that is, from perceptual information. Close inspection is likely to reveal vital information and critical defects. Because of this differentiation of products by reference to features that fit the situations of buyers, the information requirements of the agents of a money-bargaining system are extensive. But for acquisition of physical objects, the required information is mostly available as perceptual information and the potential problems are significantly less than in the acquisition of products that are entirely or very largely defined by testimonial information.

Akerlof's (1970, pp. 499-500) guarantees give additional protection, covering buyers against defects that may not be apparent from inspection, or which emerge after the car has been bought. They constitute a form of insurance, for which the buyer pays, even though they may appear as a generous provision of the seller. They are products defined by testimonial information, like health insurance. They transfer some of the risk of 'lemons' to the seller. Since the seller, unlike in health insurance, controls information about the relevant situation – the state of the vehicle – the transfer of risk to the seller seems appropriate. The transfer of risk changes the situation of the buyer, so he or she may change behaviour. The existence of a guarantee may cause a buyer to skimp on full inspection of a vehicle he or she plans to buy. This is equivalent to the 'moral hazard' identified with other forms of insurance (e.g. Stiglitz, 2002, p. 465 etc.) and 'safety nets'. The effectiveness of guarantees, as with other insurance, depends on legislation through formal support-bargaining that provides for enforcement of their terms.

Transactions are dependent on information, and for the most part relevant information is freely available, since the agents involved will have interests in confiding to their counterpart

information necessary to conclusion of a transaction. When there is potential for suppression of relevant information, the agents of money-bargaining systems take steps to obtain it, resorting where necessary to the political support-bargaining system to establish penalties for failure to release relevant information. This system of penalties protects a money-bargaining system more generally from any too prominent prospect that people will not get what they pay for or not be paid appropriately for what they provide.

Where formal support-bargaining systems are not effective in providing general protection against failures to release relevant information, the agents of money-bargaining systems tend to confine their transactions to people of their own social circle, who are likely to be concerned at the loss of support from the social circle if they cheat another member. Within a small social group, the threat of social ostracism can keep people honest in their monetary transactions. On this basis, it is apparent that in a time of serious social fragmentation certain markets, including in particular provision of health insurance and credit, might be extinguished because of the risks associated with them. This dependence of markets on social order has a positive side. Many markets will be created and extended as the social circumstances evolve that reduce the risk of engaging in such markets. Economies as a whole evolve when political and social circumstances evolve to provide security in transactions.

Within the neoclassical theory group, Akerlof's model has been accepted as a satisfactory account of information problems, broadly compatible with continued faith in the neoclassical model. But Akerlof's model introduces, besides product differentiation, notions of expectations, ignorance, uncertainty, time and risk, implying that the model is no longer a rational account of resource allocation. The modification is at best an ill-fitting patch for a model that might be regarded as wholly discredited by such introductions. With the incorporation of ideas that take consumer choice closer to reality, the model loses its coherence and its most seductive quality. Thomas Kuhn in his study of scientific revolutions noted the importance of anomalies in changes of paradigm (Kuhn, 1970, pp. 52-3): 'Discovery commences with the awareness of anomaly, i.e. with the recognition that nature has somehow violated the paradigm induced expectations that govern normal science'. In the present context, disparities of information violate the paradigm induced expectation of perfect information. In *A Theory of Support and Money Bargaining* information is identified as one of the pivotal anomalies of neoclassical theory which can only be accommodated by the new paradigm of support-bargaining and money-bargaining (Spread, 1984, paras. 3.7-93).

Screening and signalling

Stiglitz takes up the issue of asymmetric information within the confines of the neoclassical model, though he recognises the damage it does to the model as all but terminal. He notes that the problem of asymmetric information is overcome if people can be relied upon to tell the truth, though he acknowledges immediately that they are unlikely to do so all the time (Stiglitz, 2002, p. 471): 'Let every person tell his true characteristic. Unfortunately, individuals do not necessarily have the incentive to tell the truth. Talk is cheap. Other methods must be used to convey information credibly'.

Stiglitz (2002, p. 471, 475, etc.) suggests that providers of health and credit services try to obtain the information they need by a process of 'screening'. A person with deficient information may screen aspects of the behaviour of a potential counterpart in a transaction and draw conclusions. For example, a provider of health insurance may note that a potential

client is ready to climb stairs to a fifth floor office, suggesting that the person is in good health, and consequently a good insurance risk (Stiglitz, 2002, p. 472).

'Screening' tries to elicit information, or confirm information, that might not be otherwise available, or might not be accurate. It seems conceived as a means of eliciting relevant, vital or critical information that might be withheld or distorted by a client. The client for health insurance may assure the prospective provider that he is in excellent health, but the provider may nevertheless be reassured if the client ascends five floors without trouble. If, on the other hand, the prospective provider is able to screen the client's intake of medicines from the local pharmacy, he may be able to deduce that the entries on the application form do not fully represent the health situation of the client. The screening process is seen as involving a process of 'self-selection', since by their behaviour clients for insurance, credit, etc. reveal their suitability as clients. It is, however, a matter of unwitting self-selection. The clients are not themselves the selecting agents; they do not consciously self-select. There is an adage to the effect that bank credit policies are equivalent to offering someone an umbrella when it is not raining and denying them an umbrella when it is raining. The need for an umbrella implies at least a threat of rain. An applicant for credit necessarily reveals that he or she is short of funds. Similarly, someone applying for health insurance is likely to have concerns about their health. The contemplation of insurance or credit transactions implies uncertainty and risk.

The 'screening' process depends on situation-related interest and action. Because interests and actions derive from situation, it is possible to infer from people's behaviour what their situation is. If someone ascends to the fifth floor at a run, then their health is likely to be good. They behave in that way, given the desire to move quickly, because their situation permits them to do so. If someone buys a bottle of milk in a shop, it can be inferred that the stock of milk in the fridge at home is regarded as deficient. If someone is consuming large amounts of certain potent medicines from a pharmacy, they are likely to be suffering some acute malady. At a more sophisticated level, if someone opts for a high excess on an insurance policy, it can be inferred that they are not expecting to claim, and are consequently a good insurance risk (Stiglitz, 2002, pp. 468, 472-3). Situation dictates interests and actions, so that it is possible to infer situation from actions.

Michael Spence (1973) earlier introduced the idea of 'signalling'. He provides a model of an employment selection process based on assumptions regarding educational level, productivity, costs of education and the relationships between them, including a feedback loop regarding observed productivity. Candidates for employment acquire varying levels of education which are understood in terms of potential productivity by the employer. Spence investigates the properties of his model with regard to achievement of equilibrium, concluding that there is no determinate equilibrium. He notes that his model of employment signalling assumes relative infrequency of signallers in the market, and consequently the model probably does not have general application. The market for consumer durables, for example, is likely to have a quite different informational structure (Spence, 1973, p. 374).

More simply, 'signalling' in the employment market can be understood as information provided by applicants to potential employers signalling that they have the necessary capacity for the employment. In general, 'signalling' is the provision of information, wittingly or unwittingly, by an informed person to a lesser informed person (cf. Stiglitz, 2002, p. 475). 'Signalling' in this usage involves both the intentional release of information likely to advance the interest of the information holder in the prospective transaction and the unintentional release of information. An executive of a company might, for example, sell shares in his or her

company, implying that his or her own valuation of the shares is less than that of the market. The intentional release of information is part of the bargaining process – it is a function of advertising. Asymmetries giving rise to intentional release are problematic only because they are anomalous to the neoclassical model. The unintentional release of information involves the derivation of information about situation from behaviour, as in the idea of ‘screening’. Information released unintentionally may be damaging to the releaser. According to Stiglitz (2002, p. 475), ‘...the differences between signalling and self-selection screening models lie in the technicalities of game theory, and in particular whether the informed or the uninformed player moves first’. It may not be clear who is moving first, since an informed person may behave in a certain revealing way, without having any idea that he or she is doing so. This may be regarded as the ‘first move’. But the uninformed player who interprets the behaviour may be regarded as moving first as far as the acquisition of information is concerned. Beyond the context of asymmetric information, the idea of money-bargaining suggests a distinction between the information that an agent controls and releases freely because it is in his or her interests to release it, and information that has to be derived from actions or behaviour, because the information is withheld, being inimical to the interests of its holder. This reflects the major difficulty of information in a bargaining system – obtaining information relevant to a transaction that is held by an agent whose interest lies in withholding of the information. There are issues of credence whether information is provided directly or by derivation, but in the latter case there arise also issues of interpretation. Buying milk does not necessarily mean the buyer has a shortage of milk in the fridge. The ideas of ‘signalling’ and ‘screening’ seem designed to keep economic processes as far as possible distinct from any political process. But they do not resolve the problems arising from the withholding of relevant information. Such problems are resolved, in so far as they can be resolved, through support-bargaining.

Information, situations and bargaining position

In defence of the neoclassical model, Stiglitz notes that problems of asymmetric information arise with any importance only in the context of transactions like credit, insurance, employment and used cars where one agent is better informed than the other. He remarks in his 1985 article (1985, p. 30):

Let me emphasise, in concluding this section, that I do not want to over-state my case: there may be situations, particular markets, in which information costs are low, and in which the traditional theory does apply...Our contention is only that there are many situations where information costs are significant, and where the nature of the market equilibrium is, as a result, significantly altered.³

In his 2002 article he writes (2002, p. 488):

Despite its deficiencies, the competitive paradigm did provide insights into many economic phenomena. There are some markets in which the issues which we have discussed are not important – the market for wheat or corn – though even there, pervasive government interventions make the reigning competitive paradigm of limited relevance.

³ Stiglitz, 1985, p. 30.

In transactions involving the ordinary run of common products – the products more commonly conceived of in the context of neoclassical theory – agents have sufficient information to evaluate their sales and purchases. In markets for products such as wheat or corn, issues of asymmetric information are not important. In these markets buyers and sellers have no need of intimate knowledge of the situations of their counterpart agents to proceed with a transaction. Stiglitz's continued commitment to the neoclassical model seems largely dependent on his view that problems of asymmetric information are confined to relatively few markets with special characteristics.

As was seen above, buyers know their own situations, and can assess the implied interests. They can inspect physical produce on offer and reach confident conclusions as to whether the produce will meet their requirements. For the most part, they do not need to know the situation of the vendor. On their side, vendors will know their own capacities and costs, and their interests will be satisfactorily accommodated by sales at the stipulated prices, without any need to know the particular situations of buyers. Most importantly, the vendors are not acquiring any risk that is contingent on the situation of the counterpart agent. Most purchases of common products do not require that either agent has information about the circumstances of the other. These are transactions concerned largely with information derived from perception. 'What you see is what you get' and the risk of not getting what you want is acceptably low. They involve the common 'things' that are the essential conception of the neoclassical model.

The essential conception includes also an idea of buying and selling in what is, from the lack of any other specification, a rapid 'over the counter' kind of transaction. But buying a large and high value quantity of grain over an extended period involves further considerations. Cutting a few pounds off the price per tonne of wheat can involve a saving of thousands of pounds. In this sort of transaction, knowledge of the seller's situation may make possible these savings, and hence investigation of a seller's situation may be worth the effort. If a buyer of grain could get the vendor to fill in a form about his level of stocks and their condition, and assuming the vendor filled in the form honestly, the buyer might learn that the vendor had large stocks of grain in a deteriorating condition which had to be disposed of rapidly. He would gain vital information, telling him that with a bit of haggling he would be likely to get better terms than those immediately on offer. The buyer's bargaining position depends partly on the situation of the vendor. While the buyer is unlikely to get the seller to fill in such a revelatory form, he may still be able to establish certain features of the vendor's situation that affect his bargaining position. By snooping around the vendor's warehouses and chatting to his workers he might be able to ascertain that the vendor was over-stocked.

The vendor may also gain advantage from knowing the situation of the buyer. If the vendor knows that the buyer has committed to sell on the grain at a certain price, he may be able to push up the price he receives closer to that at which the buyer has agreed to sell on. If the buyer faces a penalty for default over the selling on, the vendor may be able to raise the price by threatening to withhold supply beyond what he knows to be the buyer's deadline. Information is important to bargaining position. In small routine transactions such as those envisaged in the neoclassical model rooting out background information on situations in order to establish bargaining positions will seldom be worthwhile. But for large one-off transactions, or transactions involving long-term commitments, such research may bring important returns.

In confining the idea of asymmetric information to markets where information is directly concerned in the understanding of the 'product' Stiglitz misses many of the broader implications of information for economic processes. In a money-bargaining system, where

selection and valuation are determined by situation, where situation dictates bargaining position, and where terms of exchange depend on bargaining position (Spread, 2008, pp. 93-9), information is of paramount importance.

An information interface

The credit, insurance and employment transactions which are so important to the idea of asymmetric information all involve provision of information, or the 'filling in of forms'. Depending on the information provided in the forms, terms will be settled, or in some cases a transaction may be abandoned. The providers of credit, insurance and employment will all have established certain categories of client situation or candidate situation that they are ready to accept, implying at the same time categories that are unacceptable. If the completed forms show that an applicant falls into an approved category, then a transaction can be pursued. What is to be bought and sold is defined through testimonial information.

With wheat, bicycles and chairs, corn, cars and suitcases, there is something visible and tangible to buy and sell. A buyer can generally obtain the information he or she needs to proceed with a purchase through observation and touch. Many transactions proceed largely on the basis of perceptual information. Because such transactions are so common it becomes possible for many to proceed on the basis of testimonial information alone. Buyers are so familiar with the perceptual information provided by such products that they are ready to proceed with a transaction on the basis of testimonial information alone about them. The internet has made possible a major increase in the volume of business that proceeds on the basis of testimony. The use of photographs as testimonial information arouses memories of prior perceptual experience of similar items.

In political support-bargaining transactions proceed largely on the basis of testimonial information. We learn about the government provisions designed to attract our support from newspapers, radio, television, the internet and other sources. Even when there is something to be observed being done, as for example the construction of a road, we seldom actually observe. Government policies and actions are known through testimony. When we support a government, either informally or through a vote in a formal support-bargaining process, we support on the basis of testimony.

In both support-bargaining and money-bargaining, transactions are formulated and concluded on the basis of information. There lies between the reality of things, actions, events and situations an information interface upon which our attention is focussed and through which we transact our political and monetary business. It cannot be otherwise, since our minds only process information. We have to receive information in order to make decisions; we can only make decisions on information. Thus information is not just incidental to economic processes, nor just a complication. It constitutes the heart of the matter. The same goes for political and social life. The information interface is the immediate object of our attention, and the full understanding of social engagement requires at its centre the understanding of the way we deal with information. In its assumption of perfect information neoclassical economics does not merely side-line 'a problem'; it deprives economics of any chance of properly understanding the way economies function.

The information interface is a creation of the support-bargaining and money-bargaining system. People, whether business people, consumers, employees, politicians or people in a

social context, provide information relative to their situation and for the purpose of advancing their interests. Information can be and invariably is manipulated for the advance of interests. Advertisers extol the virtues of their products; politicians assert the value of their policies and denigrate those of their rivals. Societies and economies evolve through the information interface. Given the great predominance of testimonial information, this means that economies largely evolve on the basis of testimony about what is. The link between that testimony and the reality of things, actions, events and situations is dictated by the dynamics of support-bargaining and money-bargaining.

Advertisers, politicians and everyone else project into the information interface information designed to advance their interests. Information is, then, quite unlike the 'products' that are normally conceived as bought and sold in a 'market'. People are giving away information in order to establish situation concepts that are conducive to their interests, and understandings of products or policies designed to show their fit to the situations of their audience. If people have a certain concept of their situation, they will act by reference to that concept. If people can be persuaded that their social situation requires a certain type of car, they are more likely to buy that car. If people can be persuaded that their carpets may smell of mould, they are more likely to buy carpet cleaners.

People also want information that is relevant to their situation. If they are aware that their carpets are odorous, they are likely to pay for information about how to clean them. If people see that those in a comparable situation to themselves, with comparable budgetary circumstances, are buying certain products, they may pay for information about those products, whether they are cars and yachts, houses and horses, tools and benches or caravans and tents. Information can be bought and sold, but the value of information depends on its relevance to the situations of the buyers. The link of interests to situation means that all transactions are conducted in terms of information regarding situation and how it is to be accommodated in each specific transaction. Hence the extent and importance of the information interface.

In support-bargaining these aspects of information are even more important than in economic exchanges, since the policies and provisions of political support-bargaining and the theories and hypotheses of intellectual support-bargaining are almost entirely constituted from information. People buy newspapers and magazines that accord best with their understanding of political situations. Academics read journals that are relevant to the paradigms and theory groups in which they work. Information is valued for its relevance to interests, and interests are derived from situations. The information interface spreads right across societies and economies.

While for the most part the information acquired and used is testimonial information, in money-bargaining the incidence of perceptual information arising from the concern with material things is more apparent. The prominence of material things and the assurance associated with perception led neoclassical economists, pursuing the status of physicists, to view as acceptable an assumption of perfect information. Stiglitz's (2002) most prominent exemplars of asymmetric information are, by contrast, 'products' traded in money-bargaining systems which are nevertheless largely defined in terms of testimonial information. Vital parts of this testimonial information are held by those with a potential interest in not disclosing it.

Coming from the idea of asymmetric information to the concept of transactions concluded on the basis of situation-related interests and the distinction between perceptual and testimonial

information involves some fairly intricate argument. But approached directly with the idea of an information interface the role of information is perhaps more readily understood. Transactions go ahead when the information interface implies satisfactory accommodation of the situations and capacities of buyers and sellers, whether it is comprised of mainly perceptual information, as in the case of chairs and bicycles, or whether it involves largely testimonial information, as in the case of health insurance, credit and employment. If the information interface is sufficiently complete and implies sufficient accommodation, money is passed from buyer to seller, either in perceptible form or in the form of testimony. Support moves on analogous considerations.

The information interface is generated by the pursuit of interest in processes of support-bargaining and money-bargaining. This does not, however, imply that it is created without regard for realism and truth. People have obvious interests in realism and truth. If the car they have bought is a 'lemon', they want redress. In the absence of some enforceable legislation that gives them redress, they may be inclined to avenge themselves directly on the seller. If politicians are revealed as liars, they may lose all the support they are trying to assemble. The support convention may break down. Order in society is likely to rank highly in people's ordering of interests, and an orderly society needs an underlying commitment to realism. Parents invariably instruct their children to 'tell the truth'. There is a large faction committed to the revelation of truth, incorporating not just the determined and instinctive truth-seekers, but virtually everyone, on the basis that some part of everyone would prefer the truth. There are partisan groups or factions that pursue interests related to their particular situations, but there is also a faction that pursues the wider and more fundamental interest in the human condition. The pursuit is complicated by the existence between truth and falsehood of a large hinterland of selection, omission and distortion. While the reality behind the information interface is what it is, the information interface is subject to manipulation. A washing machine remains the washing machine that it is, but information about the washing machine can be manipulated to make it seem attractive or unattractive, functional or dysfunctional. Information can be manipulated to advance interests without actually being false, or without actually being demonstrably false. Advantageous information can be selected for promulgation in preference to disadvantageous information. Neoclassical theorists select aspects of human behaviour that make possible the construction of mathematical models of economic exchange. Akerlof (1970) selects assumptions regarding the buying and selling of cars that lead to the conclusion he desires. The information interface comprises information selected by reference to the interests of its promulgators. If it contains extensive information that many wish was not there, it is because it has been selected by their counterparts or opponents for their advantage in the bargaining process. The pursuit of factional interest may go beyond mere distortion to the propagation of outright falsehoods. While the propagation of falsehoods can be counter-productive, it can on occasions be advantageous. People may lie if they think they will 'get away with it'.

The information interface comprises elements of truth and realism but perhaps more prominently it comprises information manipulated by factional interests for their own purposes. The existence of many factional interests ensures that the information interface is of great variety. It is created through the process of support-bargaining and money-bargaining, but constitutes also the subject-matter of support-bargaining and money-bargaining. As part of the creation process, societies make considerable efforts to purge the interface of outright falsehood and limit the extent of manipulation. Through support-bargaining extensive legislation and social custom has been established that condemns and punishes misrepresentation and the propagation of falsehoods. Only with the information

interface policed in this way has it been possible to evolve support-bargaining and money-bargaining systems to their full potential.

Changing the paradigm

Perfect information is essential to the mathematics of the neoclassical paradigm. If time has to be spent searching for essential information uncertainties are introduced that cannot be dealt with satisfactorily in mathematical terms. The idea of an optimal allocation of resources becomes contingent on outcomes of searches that are themselves absorptive of resources. A decision to search depends on the costs of search, and the costs of search depend on search – an infinite regression arises. Thus Stiglitz (1985, p. 23): ‘...for how is the individual to resolve the infinite regress of whether it is worthwhile to obtain information concerning whether it is worthwhile to obtain information...’ The model is irretrievably lost. Stiglitz dismisses also the earlier salvation of the neoclassical theory group in the argument that even if information is not absolutely perfect the model still fulfills much the same functions as with perfect information (Stiglitz, 2000, pp. 1442-44, 1470; 2002, pp. 461, 463, 467, 475, 477). He writes (Stiglitz, 1985, p. 26),

With perfect information and no non-convexities, the postulates underlying perfect competition have a certain degree of plausibility, or should I say, at least internal consistency. The competitive paradigm is an artfully constructed structure: when one of the central pieces (the assumption of perfect information) is removed, the structure collapses.

The neoclassical model is highly sensitive to imperfections of information. While Stiglitz acknowledges that the neoclassical paradigm is invalidated by recognition of the imperfections of information, he chooses not to abandon it (Stiglitz, 2002, p. 486):

It is not easy to change views of the world, and it seemed to me the most effective way of attacking the paradigm was to keep within the standard framework as much as possible. I only varied one assumption – the assumption concerning perfect information – and in ways which seemed to me highly plausible.

Stiglitz (2002) still works within the neoclassical paradigm, referring frequently to Pareto efficient equilibrium as the criterion for optimal allocation of resources and hence the criterion for satisfactory outcomes. There is, of course, practical wisdom in staying with the mainstream theory group. Dissenters are often disappointed. Theoretical ‘whistle-blowers’ are likely to suffer the same uncomfortable fate as institutional whistle-blowers – the two processes are much the same when theory is heavily institutionalised, as is economic theory.⁴ As noted in the previous article, many rewarding careers have been built on modifications to neoclassical theory (Spread, 2012, p. 49). Spence, Akerlof and Stiglitz shared the Nobel Memorial Prize for Economics in 2001 for their work on asymmetric information. Stiglitz’s career shows he is not averse to controversy. Perhaps some of that disposition might usefully have been spent in furthering the shift to a new paradigm, however unreceptive the neoclassical theory group. The choice exemplifies the conflicting impulses to pursuit of truth and cultivation of the support more readily available from an existing theory group in an intellectual support-bargaining process. The mainstream theory group opts to sustain support

⁴ On the institutionalisation of theory, see Spread, 2008, Chapter 12: Institutionalisation of Theory Making.

for its model, suspending the pursuit of a truth that seems intolerably elusive. There are insufficient numbers of authoritative people insisting on the pursuit of truth to make it worthwhile for Stiglitz to join fully in the pursuit. But if the mainstream theory group is recognisably wrong, it has much to answer for in propagating falsehoods to the societies that depend on academia for expert guidance regarding their social and economic condition. It pollutes the information interface. A recent article in the *Cambridge Journal of Economics* blows the whistle loudly on the mainstream theory group (Freeman, Chick, Kayatekin, 2014, p. 524):

Nowadays it is almost beyond dispute that economics has failed both itself and its public in a systematic manner that goes beyond what is reasonable by the standards of either public service and accountability or scientific accuracy and scholarship.

The sense of lost opportunity is the sharper because Stiglitz can see the basis of an alternative and more realistic theory. The truth is perhaps not wholly elusive. In a section headed 'Beyond Information Economics' he writes (Stiglitz, 2002, pp. 486-7):

Finally, I have become convinced that the dynamics of change may not be well described by equilibrium models that have long been at the center of economic analysis...Dynamics may be better described by evolutionary processes and models, than by equilibrium processes. And while it may be difficult to describe fully these evolutionary processes, this much is already clear: there is no reason to believe that they are, in any general sense, 'optimal'.

There is no equilibrium and no Pareto optimal state. Economies evolve, and economic theory has to incorporate an evolutionary process. The idea of support-bargaining and money-bargaining is inherently evolutionary, in that decisions are situation-related, so that an economy moves from situation to situation.⁵ Economic theory has to be reconstructed as evolutionary economic theory.

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SUGGESTED CITATION:

Patrick Spread, "Asymmetric information, critical information and the information interface", *real-world economics review*, issue no. 70, 20 Feb 2015, pp. 121-140, <http://www.paecon.net/PAEReview/issue70/Spread70.pdf>

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