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John Law, 'Traduction/Trahison: Notes on ANT', published by the Centre for Science Studies, Lancaster University, Lancaster LA1 4YN, at
<http://www.comp.lancs.ac.uk/sociology/papers/Law-Traduction-Trahison.pdf>

Publication Details

This web page was last revised on 30th November 2003; the paper was previously published at <http://comp.lancs.ac.uk/sociology/stslaw2.html> in 1999

Traduction/Trahison: Notes on ANT

John Law

What would it be to 'speak for' a theory or a tradition in STS? What would it be to 'represent' that theory? To offer an account? An authoritative account of its character, its development, its strengths and its weaknesses?

Sometimes I find that I'm faced with this question. I am asked to speak for actor network theory. To tell about it. To sum it up. To offer a verdict. When this happens I feel uncomfortable. For the request poses a problem. The problem of what it is to be a 'faithful representative'. And in particular with what it might mean to 'represent' a theory that talks of representation in terms of **translation**. Which seeks to undermine the very idea that there might be such a thing as fidelity. Faithful translation. Which stresses that all representation also betrays its object.

Perhaps there is no good answer. Or perhaps, on the contrary, there are many. But here is one possibility. That one might represent actor network theory by **performing** it rather than **summarising** it. By exploring a small number of case studies rather than seeking to uncover its 'fundamental rules'. By telling of examples, representatives of actor-network theory, that are **both** faithful and unfaithful. By stressing that **traduction** is also **trahison**.

To do this one would need to tell stories, stories about noise. Actor-network noise. The kinds of noises made by actor-network theory. Noises on. Noises off.



Story One

This is a story about Sweden and Nicaragua. It is also a story about technology transfer. Except that one of the things we are going to learn is that there is no such thing as technology transfer. That technologies don't originate at a point and spread out. But instead that they are passed. Passed from hand to hand. And that as they pass they are changed. Become less and less recognisable.

The story is told by Madeleine Akrich(2). And she tells it so. In Sweden there was, there is, a machine for compacting forest waste: bark, offcuts, shavings, sawdust. For compacting forest waste into briquettes. These briquettes are combustible: they are burned by industry. It was, it is, good business. There's a lot of forest waste in Sweden, and plenty of industry.

The Swedes were in contact with the Nicaraguan government. And they wondered: could this machine for making briquettes out of forest waste be used in Nicaragua? For Nicaragua is short of fuel. Perhaps the machine could convert tropical forest waste products into combustible briquettes?

Madeleine Akrich traces the negotiations that followed. The setbacks. The experiments. I've already given her punch line away: it is that the machine starts to change as it moves from Sweden to Nicaragua. It starts to change, and the social and technical relations around it also start to change. They start to change as new actors come on the scene - new actors such as deforestation, the geography of the country, the civil war.

So a series of negotiations.

First negotiation: what raw materials should be used? Where most of the people live in Nicaragua there is little wood, let alone wood by-products. Such forests are remote, at the time held by the Contras, so wood won't work. What about rice waste? Or cotton? A series of experiments. The first won't work: you can't make briquettes out of rice waste. But the second will: the stalks of cotton plants are fine. It turns out that they make nice briquettes that don't fall apart at the first opportunity - and there's plenty of cotton waste around too.

Second negotiation. A new cast of actors: farm owners and cotton pests. For the waste is a by-product of farming activity. The farm owners grow the cotton and then they have to dispose of the waste. They have to burn or bury it to keep insect pests under control. The law says so. So there's no problem about converting cotton plants into briquettes, in principle. But the stalks have to be collected first. How?

Third negotiation: this involves farm labourers, and a machine from the Sudan. Can farm labourers cut and collect the cotton stalks? Answer. No, there aren't enough farm labourers and in any case they are already busy. Cutting and collecting will have to be mechanised. A machine which tears cotton plants out of the ground is brought from the Sudan. It works fine except that it leaves the débris lying around, still without the labour needed to collect them.

Fourth negotiation. Roots and more machinery. There is a subtle shift here: it turns out that about half of the cotton plants lie below the ground. Can the roots be turned into briquettes too? This has never been done in Sweden. The question never arose. Answer, yes, no problem. And a new machine, based on the Sudanese version, is built. It collects the waste and puts it into manageable bales ready to be collected. A successful outcome.

Fifth negotiation. A further difference from Sweden. There the sawmills work all the year round, and there is a steady stream of waste products. But in Nicaragua the cotton waste is only collected for 90 days a year. The rest of the time the new cotton is growing. Which means that it's going to have to be collected and stockpiled near the briquette-making machine. So this is a successful negotiation, no problem. Storage warehouses are set up and the waste is collected.

Sixth negotiation. Suddenly, after operating successfully for two years the stored waste turns into a powder when it is shredded. This is a terrible reverse, because it's quite impossible to make briquettes out of powder. So what is going on? There's an investigation which turns up another new actor. A pest called **Amphisorus Cornutu**. This usually feeds inside bamboo stalks. But now, it turns out, it also burrows out the inside of stored cotton plants. But why has this only happened after two successful years? Why not in the first place? There is a further investigation, and it turns out that the answer is that the waste is being stored differently. It's



less compact. Before, with the experimental Sudanese machine, it has been partially compacted before being transported. Now it isn't. And this is perfect for **Amphiserus Cornutu**: it needs the air that is now available - which has, however, implications for the new machine. It will have to work differently.

Seventh and final negotiation. Who is going to buy the briquettes? In Sweden they are used by industry, but here in Nicaragua, industry isn't interested. They're not interested because their boilers won't burn the briquettes. Is this another terrible setback? No: the answer is, its another transformation because, or so it turns out, the briquettes are perfect for domestic ovens. And even better for bakers. The price starts low. The briquettes sell. The price is put up. They still sell. It's put up again. And still they sell. The project is a success. A new technology has been transferred to Nicaragua.

Commentary One

Madeleine Akrich's story is an actor-network story. She tells of networks. Of heterogeneous networks in which actors of all kinds, social, technical and natural are made and play out their lives. It tells of two networks in particular, Swedish and Nicaraguan. She describes these two networks, and then she tells a story of the way in which they are linked. Her point is that the two networks are different in almost every respect. The briquette machine in Sweden relates to other parts of the Swedish network in a specific way, but this doesn't make much sense in Nicaraguan terms. Which means that as the machine is 'transferred' it necessarily starts to change. It starts to play different roles - but also to imply different roles for the actors round about it: from wood to cotton; from industrialists to bakers; from a continuous flow to the need for storage. These are transformations which also imply changes in the Nicaraguan network: on the **haciendas**; in the machinery for dealing with cotton waste; in the habits of customers. So it's a story of networks in transformation, of new sociotechnical syntaxes and, in particular, of the inadequacy of a diffusion model for technological transfer. For as so-called 'transfer' takes place there is change. There is translation. There is the creation of new relations. So there is change in Nicaragua to be sure, **but also change in what is transferred**.

Madeleine's description is an exemplary actor-network study. Let's detail some of the ways in which this is the case.

1. It is organised in terms of a semiotically-derived or structuralist notion of **network**. Such a network is much like a structure, except for one crucial difference. Unlike a structure, there is no assumption that specific links or nodes in the network are guaranteed, as it were by a form of semantic cohesion given in the order of things; instead both links and nodes have to be uncovered by the analyst. They could be otherwise(3).
2. She assumes that her networks are **materially heterogeneous**; which means that they are composed of cotton as well as farmers, from habits as well as pests. The point, then, is that all the elements have similar status(4).
3. She works on the assumption that **actors** may be both **human and non-human**. That is, she assumes that the various elements of the heterogeneous network, cotton or farmers, habits or pests, are all equally able to **act** upon one another.(5)
4. Another semiotic feature in this sociology of translation: as a part of this she insists that networks may be imagined as **scripts**. Which means that one may read a script from, for instance, a machine which tells or prescribes the roles that it, the machine, expects other elements in the network to play(6).
5. Her work both assumes and explores the idea that building and maintaining networks is an uphill battle - that enrolment is **precarious**; the argument, then, is that links and nodes in the network do not last all by themselves but instead need constant maintenance work, the support of other links and nodes.
6. She takes it, as a consequence, that networks are **processes** or achievements rather than relations or structures that are given in the order of things.
7. And finally, her work shows that translation implies both **similarity and difference**. Similarity, for there is some sense in which it is possible to say that the briquette machine in Nicaragua is 'the same' as the briquette machine in Sweden; but also difference,



because by the time it has been located in its new Nicaraguan environment it has undergone many changes.

This is an exemplary actor-network study. It is a study of an object, of something out there. It is a study of the way it passed from hand to hand, was translated. But what about **here**? What about ourselves? Is this not a study we can also turn on, and apply to, ourselves? Indeed to actor-network theory itself? The answer, or so I want to say, is yes. For instance we might ask:

1. Is actor-network theory in Paris in the 1980s 'the same' as the actor network theories performed in Paris, San Diego, Maastricht, Lancaster, Keele, Melbourne, or Trondheim, in the 1990s? The answer is: yes, but also no. For we can insist on similarities, but **also** on differences. More of these shortly
2. Is there such a thing as 'actor-network theory' at all? Answer: yes. We can certainly make a story that tells of **unity**. But the answer is also no, for it is just as easy to tell tales of a kind of **diaspora**, of interaction with other 'theories', of confusion, or if you prefer, of complexity, overlap and partial connections.
3. Similarly, if you ask me about this thing called 'actor-network theory', would it be better for me to say that we're dealing with a set of **diverse practices** instead of a single set of **principles**? Answer? Well, again I can say yes, or no(7). But I'm more interested in diverting the question, in turning it aside, rather than in answering it. This is because (or so I want to suggest) it is going to be much more interesting to explore differences than similarities. Much more interesting to trace betrayals in the practice of translation rather than insisting that there is a general set of actor-network principles. For this is my point: what happened to the briquette-making machine is also what has happened to actor-network theory. It has passed from one place to another. From one network to another. And it has changed, become diverse. And it is my object to attend to some of those changes. To attend to the noise in the actor-network machine, its ragged complexities, rather than to attend to its gleaming purity.

So this is what I want to take from Madeleine Akrich's study. That ANT is not necessarily about centres of calculation. It is not necessarily about drawing things together(8). Or if it is, it is also about passages and differences, about passing on. And that, to be sure, is the subversive character of Madeleine Akrich's study. In translating ANT she has also transformed it, changed it. She has put it into a different place, a different set of networks, where it does other kinds of work. It does the work of difference.

Story Two

This is a story about California, and about infertility treatments in California. It is also a story about agency, about distribution between subject-status and object-status. between human and non-human. It's something like this: ANT has often said that non-humans are actors too. And it has frequently been told off for doing so. Told off for 'dehumanising' the human. But this Californian story, one that is told by Charis Cussins(9), tackles the problem in a different way: it asks what is so bad about being treated as an object? And argues not only that it isn't necessarily 'inhumane' to treat people as objects, but also that treating humans as objects may be vital to the construction of subjectivity.

The story runs so. In California many women - and men too - attend clinics for treatment for infertility. Some of these treatments are complex and high-tech, for instance, as with **in vitro** fertilisation (IVF). A woman who ends up going in for IVF generally follows a complex trajectory which goes through four stages. Each of these has to do with objectification.

Stage one is a pelvic exam involving all the indignities of a gynaecological exam: a body spread for inspection by a physician assisted by a nurse; the use of various instruments; the insertion of gloved hands into the vagina; palpitation and discussion with the patient. Charis Cussins writes:

'Conversation with the patient on the examining table changes character so that here internal reproductive organs become the focus of attention. This change is choreographed by the physician's, nurse's and patient's co-ordinated positionings, as well as by the swabbing and gloving and placing of the speculum. These mundane



steps that render the body and the instruments compatible are at the heart of objectification.' (Cussins: 1998:177)

Stage two is an ultra-sound examination. Again the patient is arrayed on an examination table and rendered open for inspection, though this time an inspection which looks for ovulation, ovarian cysts, pregnancy, and for follicles. This is an inspection which, by technical means, distinguishes and characterises further bodily parts and processes. Here there is more objectification.

Stage three is diagnostic surgery. Here the patient is anaesthetised and (in one version) a laparoscope is inserted into a small incision in the abdominal wall. A laparoscope is a small lens on the end of a thin tube which generates visualisations that may be seen on TV monitors. These are representations of the state of organs such as the ovaries, the fallopian tubes and the uterus and may indicate to the surgeon that surgery is appropriate, either to correct some pathology, or to remove eggs. Note that since the patient is unconscious she plays no active role. Her objectification is carried out on, and in the presence of, her body, but not her consciousness. Cussins also notes that the body is partly removed from itself:

'The uterus and ovaries and tubes are represented **sui generis**, as it were, on the monitor, floating apart from the context of the rest of the body and the whole person'. (Cussins: 1998:177)

In stage four the creation of an array of organs and processes outside the body of the patient goes one step further. For now, in the embryology laboratory, the body of the woman has disappeared altogether. Instead there are objects present which 'belong' to her body, and that of the donor. Eggs and the sperm meet each other for **in vitro** fertilisation. And there are frozen embryos. But such physical separation from the body is overcome by what Cussins calls 'an ontology of connectedness between the body parts and patients'. For it is all an integral part of a trajectory which will, if all goes well, lead back to a 'normal pregnancy': the growth of a foetus in the womb of the patient. Thus the eggs and embryos **belong** to the patient. Or, more precisely, they are **made** to belong to the patient in a carefully constructed economy of care and connectedness generated by and within the laboratory.

And the bottom line? The bottom line is this. Under certain circumstances - most notably those of a successful pregnancy - this process of objectification, of turning the patient into an array of objects that are, at least in some instances, disembodied, intersects positively with construction of the subjectivity of the patient: the notion, for instance, that it is an important part of a woman's life to experience pregnancy, childbirth, and child-rearing. Not that there is any necessity in this. For the objectifications involved in attempts to secure pregnancy that later turn out to have been unsuccessful may not be so integrated. Indeed, may be bitterly resented by the patient as incursions or intrusions into her identity as a human being. Objectifications which do not contribute to what Cussins calls a 'long range self'.

Commentary Two

It's a bit of a moot point whether Charis Cussins' story 'belongs' to actor-network theory or not. She cites actor-network writers. But she also cites symbolic interactionists, ethnomethodologists, and feminist writers from STS and cultural studies. So perhaps I shouldn't be discussing her work here at all. It 'belongs' just as much in these other traditions as in actor-network theory. But then again, the question of ownership isn't very important in a translation model, is it? Or if it is, it's a question of practice, an outcome of processes of translation, of similarities and differences that crop up as something - say a briquette-making machine or a human ovum - is displaced from one context or network to another. A matter of ontological connectedness.

At any rate, from the point of view of the 'principles of actor-network theory' (whatever these might be) Cussins' story indeed performs a lot of **differences**, differences in translation. To put it differently, it shows an abundant concern with noise, with things that don't fit together very well into single narratives. Thus she shows an interest in **inconsistency**: between objectification and subjectivity; or between, on the one hand, circumstances in which there are **complaints** about objectification and other circumstances in which this is willingly **embraced** by the woman. All of which differs, shall we say, from the ways in which most actor-network stories were told in Paris in the 1980s.



What should I say about this? One answer might be that there wasn't so much room for inconsistency in 1980's actor-network studies. No. Let me try to say it more carefully. These studies had plenty of room for inconsistency, for things that didn't fit. But things that didn't fit were tackled in a particular way. They were tackled as matters to be controlled, limited, mastered. To be 'drawn together'(10), centred.

It's possible to note this, and raise eyebrows about it in a variety of ways. For instance: that it tended towards the managerialist; that it was about Nietzschean mastery; that it was about Machiavellian strategies; that it tended, as Steve Brown and Nick Lee put it, to absorb the 'undiscovered continent' of the Other(11); that it was more interested in war than reform(12); that it was concerned with network relations to the exclusion of all others(13); that it was interested in **material** heterogeneity, but much less with alterity. With deferral. Or with the Lyotardian heterogeneous, the unassimilable(14).

If we were to argue about it I know that I might lose. For the idea that translation is also a betrayal is built into the charter of actor-network theory (if we may allow ourselves to imagine that it has a charter). It was always said that actor-networks may unwind as the entities that make them up go native(15). But I nevertheless want to press the point. I want to say that there is difference between ANT of the 1980s and Charis Cussins' concerns. To say that there are differences as well as similarities. Two differences in particular:

1. Cussins is concerned to show that **decentring** may be crucial to **centring**. And, conversely, that accomplished centring may lead to motivated decentring. The strain, then, is not necessarily towards drawing things together. Or if it is, then it is about how drawing things together is intimately related to a contrary process of taking them apart. That making 'whole subjects' may work by attending to disparate organs.
2. She is concerned with temporality. But not simply with movement through time or the creation of irreversibility (concerns crucial to the project-studies of ANT in the 1980s). Instead she attends to the exquisite work of **prospective/retrospective interpretation**. With (as the ethnomethodologists might put it) the reflexive repair of indexicals. Ordering is momentary. So here is a difference: Cussins' study reveals a concern with reflexive repair that has no problem with inconsistency precisely because it **is** temporal as well as spatial. For there is no need to draw things together, except for a moment - and that moment will pass, pass into oscillation, movement, alternative patterning. At some other moment things will be ordered differently. The concern with what, perhaps, we should no longer call 'inconsistency' has been displaced. Into what she calls ontological choreography. Into dance instead of design.

Dance instead of design. But something more needs to be said. To talk, as does Charis Cussins, of ontological choreography, is not to imagine that life is light or easy. It is not to say that there are no 'constraints'. That interaction is (if I may use another old word) free from 'power'. It is not to argue for voluntarism, or to imagine that living is simply a matter of 'play', that it isn't serious. That it is a form of self-indulgence available only to the privileged. For, as Cussins also insists, dance **isn't** easy. Rather, it is an accomplishment, a form of work, of effort, of great effort, in a place, with materials that are obdurate. With materials that may resist. With materials that may impose their costs, their own forms of pain.

The ontological choreography of actor-network theory. We may make something out of its instances, out of matters that might become its parts. Accept the pain and the effort involved in holding it together, in its centring. Or, and, at another moment we may not. We may say it didn't work, that it didn't hold together, that it was never a theory at all, that the work of centring was false. Ontological alternations.

Story Three

Story three is about Britain, it's about British medicine, and it's about the National Health Service Cervical Screening Programme (or CSP). Like the story of IVF, it is also a story about inconsistency. And a story about ambivalence. It's a story about the way in which an actor-network may grow and stabilise itself not because the links are, as it were, all drawn together, but rather because they are inconsistent.



The story is Vicky Singleton's(16). She tells it so. The UK has a national programme for screening women who are thought to be at risk from cancer of the cervix. The definition of who might be at risk is a matter for debate, but roughly, it is the population of women aged between 20 and 64 who are or have been sexually active. It's possible to tell a story about the rise of the CSP programme, and the ways in which it has changed since it came into being in 1960, and to do this in an actor-network mode. In addition, however, it is also possible to focus on the way in which the programme seems to be caught up in ambivalence. For, when one starts to look, almost everything about it is ambivalent. For instance, the General Practitioners who are involved are ambivalent, or offer contrary views, in many different ways.

Some examples:

1. They are keen to persuade women at risk to undertake the test on the grounds that in this way pre-cancerous cellular changes can be detected, and the women concerned can be monitored and treated;
2. but, they **also** know that the level of cancer of the cervix has not declined in the UK during the 35 years the programme has been in existence.
3. They tell women that the test itself is simple and does not cause pain;
4. but they **also** know that the test may be painful, and under certain conditions is certainly not simple; indeed, that in some cases the test has to be taken again because the first sample of cells was inadequate.
5. They work on the assumption, and tell women, that the laboratory diagnoses of cell smears is routine and reliable;
6. but they **also** know (and here they are joined by technicians and others) that laboratory scanning of smears is complex, extremely skilled and involves the exercise of much uncertain judgement.
7. They are keen to ensure that 80% of the women at risk have a test every five years, in part because achieving this target secures them extra payment;
8. but they are **also** critical of the statistical target and the system of payment because it doesn't take account of the specific circumstances of individual women, both personal, and in terms of such background factors as social class.

Vicky Singleton also notes that under certain circumstances General Practitioners assume the mantle of expertise - as for instance when they seek to enrol women in the CSP by observing that it is in their medical interests to do so. However, under other circumstances they stress that they are ignorant, lacking the specialist knowledge to make finer judgements - as, for instance, when they say that women are rational and should be allowed to decide for themselves whether or not to participate in the programme. But her argument is that such oscillations and ambivalences are **not** a problem, not for the General Practitioners, and not for the CSP. This is because they don't undermine it. On the contrary, they actually **strengthen** it. To be authoritative under some circumstances tends to secure participation. And not to be authoritative may similarly secure participation. For instance by being suitably sensitive in persuading a participant to return for a second test.

Commentary Three

Vicky Singleton offers a view of 'the actor-network' - but it is a translated version for it doesn't talk about an overall and consistent strategy in which matters are drawn together and engineered heterogeneously(17). It doesn't talk about enrolling participants by locking them into a solid chain of translations. It doesn't tell about how some actors are immobilised by others. Rather it tells of the ways in which the network precisely depends on the **mobility** of all participants, of their ability to shift between different roles, different relations, between roles or links that don't fit, that are inconsistent with one another, that don't add up.

This work reflects a concern with decentred identity found in many areas of social inquiry including STS(18). It works on ANT and changes it by saying that no single network, no single strategy, could ever lock the participants needed to sustain that strategy or network in place. Or, to shift registers, that a network **depends** on its Other, or Others(19). On the



unassimilable. An embellishment of this would add, in good post-structuralist fashion, that the network not only depends on its Other but it also **creates** Others. That to make a signal is also to make noise. To make the assimilable is also to make the **unassimilable**. To make the homogeneous is also to make the heterogeneous.

Similarity and difference. Vicky Singleton's story is similar, similar to the ANT studies made in Paris in the 1980s. It is assimilable to them - perhaps more so than Charis Cussins' IVF stories - because it engages directly with ANT and attempts the kind of **traduction/trahison** that I have briefly tried to describe. But it is also unassimilable. It is heterogeneous because it deals with the unassimilable, that which cannot be told or performed within a single network, from a single place, or a single point.

Another difference follows from this. The stories of the Cervical Smear Programme told by Vicky Singleton **do not add up**. They are not drawn together, or at any rate, they are not drawn together very successfully.

Very successfully? Very successfully in what sense? Does this imply criticism? Well, no, I think not. For here is another concession, no doubt a willing concession, to Otherness. For if unassimilability is characteristic of the world that is described there can be no question of drawing things together in the description, of summing them up. Instead there will be lots of stories, different stories, stories that are orthogonal to one another, that cannot be told together. In which case?

In which case ... I do not know. But I have a suggestion that is implied in Vicky Singleton's writing, and perhaps in that of Charis Cussins' too(20). It is that we are witnessing a shift in the character and the role of narrative(21) in STS writing, and especially in the character and role of chronological narrative. For if we are no longer able to draw things together to tell great stories about the growth or decline of networks, then what is there to tell? No doubt there are many possible responses. But one is this: that we need to attend to lots of little stories, and then to the patterns that subsist **between** those stories, patterns that will often **not** reduce themselves to the chronology of narrative, patterns that do not form a chronological narrative - because there **is** no narrative.

Which is, I think, one possible account of what Vicky Singleton is arguing. That the CSP programme is a pattern of oscillations that cannot be told in a single and coherent way, but that it hangs together precisely **because** it oscillates and embraces ambiguities as a pattern, as an actor network, as an actor-network that cannot be told as a narrative in its ambivalences and Othernesses.

And ANT? I think we might imagine that, like its objects of study, ANT **cannot** be told. Cannot be told as a single narrative. As an overall story about the growth of a centred network with its successes and reverses. And instead imagine that it can only - and best - be represented as a set of little stories, stories that are held together (if they are) by ambivalences and oscillations. In which case, as representatives, we might then embrace an **art of describing**, an art of describing the patterns and textures that form intellectual patchwork.

Story Four

Story four is about the Netherlands. It's about Dutch medicine. No. Let's get this right. It's not a story. It's a **series** of stories. And these stories are not about medicine, but about certain practices in a specific hospital in the Netherlands, practices that have to do with arteriosclerosis. These stories are similar to those we've told about the Cervical Screening Programme. They are similar, because they are about a set of patches, and how they might link together. But they are also different. They're different because this time there **is** no pattern, no 'pattern of arteriosclerosis' to match the 'pattern of the CSP'.

The story is told by Annemarie Mol(22). She tells about different performances of arteriosclerosis. She simplifies her story by restricting herself to arterioscleroses of the leg vessels, but even so, the story is complex. Let's list just three of her arterioscleroses:

1. **Arteriosclerosis one: claudication.** This is the medical name for the pain in the legs when walking which patients report to their physicians. And when he is asked, the patient tells that his legs start to hurt after a certain distance: that he has to stop and rest for a bit before he can go on.



2. **Arteriosclerosis two: thickening of the intima of the vessel wall.** This is medical jargon for a diseased artery such as it may be made visible under a microscope. This isn't something seen in the consulting room, let alone by the patient. It can only be made visible in the pathology laboratory, and only after the amputation of a diseased limb.
3. **Arteriosclerosis three: restricted blood flow.** Here the blood isn't flowing in the way it should, down the arteries to the calves and the feet. So where is this arteriosclerosis performed? Answer: in the course of diagnosis. When the patient is visiting the hospital outpatient clinic the blood pressure in his arm is measured as well as that in his ankle. If there is a big difference this suggests that blood flow to his leg is restricted.

There are more, but let's stop. Three stories about arteriosclerosis in three different places. The question is, what are the links between them? Annemarie Mol gives two possible versions of such links. The first comes from the textbook. It locates the links **inside** the body. It says that arteriosclerosis is a disease process in which changes in the arterial walls leads to arterial narrowing. And that this in turn reduces the blood flow to the legs, causing oxygen deficiency, pain when walking, and in extreme cases, necrosis.

This is a nice a smooth story. One thing leads to another. There are correlations, correlations between different aspects of arteriosclerosis, which are all, to be sure, expressions of the underlying disease. It is a nice smooth story, but not one that necessarily works in practice.

So here's second version. For in practice - and this is the point of going to a hospital to see what happens - the different manifestations of arteriosclerosis do not necessarily map on to one another. Thus links may be projected into the body, but in practice they only exist if they can be performed. Practised. And this is sometimes not possible. A direct link between 'claudication complaints' and 'thickening of the vessel wall' cannot be performed. It is not possible, or at least it is usually inappropriate, to cut arteries out of patients for the purposes of diagnosis. On the other hand, it is possible to link patients' complaints to poor circulation of the blood by sending the patient for pressure measurements. Even so, the correlation may be low. Which means that even the links that **can** be practically explored need not necessarily hold. So Annemarie Mol tells stories in which doctors spend time and energy trying to **make** links. They **know** that narrative told in the textbooks only works intermittently. They look for links that might allow them to resolve the practical problem uppermost in their minds: what course of treatment, if any, should be followed?

Commentary Four

Does this sound familiar by now? Well, so it should. For again we're dealing with questions of similarity and difference. Similarity and difference with respect to actor-network theory. And similarity and difference with respect to the object of study. Which means that Annemarie Mol's stories are similar to the others I have told: they tell about heterogeneous sociotechnical relations between blood, legs, microscopes and doctors; and they also tell of the **ramification** of those relations, of their gaps, and their uncertainties. Similarities with ANT which are also differences. For by now we know that these stories do not necessarily add up, do not necessarily come to a point. That we may need to give up single narratives in favour of many small stories. Indeed, that it may sometimes make sense to give up small stories in favour of patterns and the art of describing those patterns.

Similarities and differences. And here is a further difference. **Perhaps there is no pattern**, no overall pattern. Perhaps, then, it is not simply that we can't **describe** a single and coherent pattern - which is what we have learned from Vicky Singleton's work on the Cervical Smear Programme. Perhaps there **is** no single and coherent pattern. Perhaps there is nothing except practices. Perhaps there is nothing other than stories performing themselves and seeking to make connections, practical and local connections, specific links.

In which case? In which case we are no longer in the business of epistemology. Of trying to find ways of telling about the links that exist between bits and pieces of complex objects. Instead, like the general practitioners and the surgeons and the laboratory technicians, we are in the business of **creating** links, of making them, of bringing them more or less successfully into being. Which means in turn that we are no longer trying to find good ways of narrating and describing something that was already there. Instead, or in addition, we are in the business of ontology. We are in the business of **making** our objects of study. Of making



realities, and the connections between those realities. Of making the realities that we describe. Of trying to find good ways of interacting with our objects, ways that are sustainable, ways that make it possible to link with them(23).

I think that this is where this tale of **traduction/trahison**, this tale of similarity and difference, this tale of actor-network theory has taken us. There are similarities and continuities, for the idea that we interact with our objects has been in actor-network theory all along. Together with the idea that the process of coming to know them is also a process of translation, of trying things out, of testing. That knowing is, as it were, all of a piece with interacting, all of a piece with the patterns that arise in a process of mutual definition of subject and object. And this persisting commitment to irreducibility means that ANT is, indeed, not properly understood as an expression of epistemological perspectivalism, as a form of relativism.

So that is **traduction**, a similarity. But **trahison**, difference, is not far behind. And the difference has to do with the form of ontology being performed. We started, I think, with the assumption that coherent realities might be performed and discovered. With its attempt to draw things together, to centre them. But the pull to the centre has become more and more difficult to sustain. **Traduction** has given way to **trahison**. And ontological centring to practices of ontological choreography; ontological ambivalences, and finally to ontological patchwork.

So there are three possibilities

1. First there is Charis Cussins' term: ontological choreography. This is a term which draws attention to the dance-like nature of ontological performance, to the effort and the work involved, to its ordering properties, and so to the possibility of the dance, retrospective and prospective, in which a set of connections is made for a moment, a reality that might hold together for a time.(24)
2. This image, the image of the ontological dance, is absent from the writing of Vicky Singleton. For in this world ontology becomes inconsistent. Ambivalent, it cannot be told as a whole even for a moment, for the whole is in tension. It can be told and performed in **this way**. Or in **that way**. But it cannot be told and performed altogether. As a whole. Even though - no, precisely **because** - it is those inconsistencies and incoherences that make a whole, a single reality, the reality of the Cervical Smear Programme. A pattern of inconsistency.
3. In the third version there is no pattern of inconsistency. Neither is there the work of choreography, the co-ordination achieved in the dance. Nothing can be told as a whole for nothing can be done as a whole, even for a moment. Instead there are similarities and differences. There is an ontological patchwork (I use the term as a noun). **And** there is also great and unceasing effort. For this time I use the word as a verb: there is great and unceasing ontological patch-**work**. This is the argument made by Annemarie Mol. To say that there are multiple realities, many ontological interactions and intersections. That there is ceaseless making and linking and clashing.

Afterwords

The exigencies of academic writing and telling are constraining. They pull in the direction of the linear, of the narrative, of the single movement through a chain of argument, a chain of translations. They imply that I should not simply stop, but rather that I should come to a conclusion, perhaps, for instance, by telling of the fate of actor-network theory, of what it has done right and wrong, of where it should be going.

I will do this. I will conclude. But I will conclude in irony. For the conclusion I want to offer is this. That actor-network theory, like the cotton débris in the story told by Madeleine Akrich, has been eaten from within. With this difference. It has eaten **itself** from within. It is its **own Amphiserus Cornutu**. A form of rigour. Of honesty. Of rigour embodied in its serious commitment to translation as **betrayal** as well as fidelity. This serious commitment has turned in a decade from a single Nietzschean narrative into an array of small and modest stories. And then from an array of stories into a patchwork of similarities and differences that performs not one but many worlds.



So the success of actor-network theory has led to its dissolution. From signal to noise. But this shift, its diasporic character, also reveals its strength. For if it is now time to abandon stories that tell of straining towards the centre then this is because doing so has helped to perform alternative narrative strategies. Strategies that are not always narratives. Narratives that are not necessarily strategic. Alternatives that are about the making of objects and subjects. That are ontological. Alternatives that have generated the possibility of an ontological politics where objects may be made and remade, remade in different images.

And this is why I would recommend actor-network theory. I would recommend it because it is weak. Because it is in dissolution. Because it has betrayed itself. Because it has turned itself from signal into noise. Because it no longer exists. Because it has dissolved itself into other ways of seeing, of writing, and of doing.

Notes

Note 1: I would like to thank Madeleine Akrich, Ruth Benschop, Steve Brown, Michel Callon, Bob Cooper, Charis Cussins, Ruud Hendriks, Sheila Jasanoff, Karin Knorr-Cetina, Joanna Latimer, Bruno Latour, Nick Lee, Mike Michael, Annemarie Mol, Rolland Munro, Vicky Singleton, Kath Smart and Leigh Star for the insights on actor-network theory afforded by their work. I am also grateful to the organisers of the ERASMUS/EASST Workshop on 'Social Theory and Social Studies of Science' held at Bielefeld from May 9th-13, 1995 for their invitation to address the workshop which was the occasion for preparing the present paper.

Note 2: See Akrich (1993), but for similar arguments also Akrich (1992).

Note 3: I take it that actor-network theory can be seen as a version of post-structuralism, though those most associated with it might dissent from this diagnosis. For discussion that explores this see Mol and Mesman (1996).

Note 4: This is a theme that runs throughout actor-network theory. For discussion see for instance Callon (1980, 1986), Latour (1987; 1988a; 1988b), Law and Mol (1995). It is also found in other STS traditions, for instance in the writing of Haraway (1989; 1990; 1991a), Pickering (1993; 1995) and Knorr-Cetina (1995a; 1995b).

Note 5: Discussed at length not only in Madeleine Akrich's work, but also in Latour (1987). For the case of animals see Kath Smart's study of dogs and dog breeding (Smart: 1993); for relations between sex and gender see Mol (1991) and Hirschauer and Mol (1995). See also Callon and Law (1995).

Note 6: This is particularly visible in Madeleine Akrich's work where she talks of 'scripts' (see also Akrich and Latour (1992)).

Note 7: But whether it is even helpful to contrast principles and practices rather than imagining that they endlessly include one another is also a moot point. See Mol and Berg (1994).

Note 8: The term comes from Latour (1990).

Note 9: See Cussins (1998).

Note 10: The term comes from Latour (1990); but see studies similar in this respect by Callon (1986) and Law (1986a).

Note 11: See Brown and Lee (1994).

Note 12: See Singleton and Michael (1993).

Note 13: For an argument that, perhaps, can be understood in this way see Mol and Law (1994).

Note 14: See Law and Mol (1997).

Note 15: This is admirably illustrated in what is, perhaps, the first recognisably actor-network study, that by Michel Callon (1980) of the ill-fated French *véhicule électrique*.



Note 16: See Singleton (1992, 1996, 1998) and Singleton and Michael (1993). To avoid complexity in what follows I refer to Vicky Singleton alone despite the joint nature of some of this work.

Note 17: This is found in the 'official' story of the CSP as in National Health Service publications and government documents.

Note 18: Examples in STS would include Haraway (1989; 1990; 1991a), Hirschauer and Mol (1995), Latour (1992), Star (1991), and Traweek (1988).

Note 19: For examples see Benschop and Law (1997) and Law and Mol (1997).

Note 20: I say this because Cussins appears interested in showing that what appears to be incoherent and inconsistent can, in fact, be understood as coherent and consistent. And, following Garfinkel, she is no doubt right.

Note 21: There is a problem and it is this: that description is felt to lack something; it is felt to be without explanation; without chronological narrative; so description by itself, a concern to trace pattern, misses out. Or so the story runs. But does description fail without the earnest attentions of narrative? For an answer to this question in the quite different context of Netherlandish seventeenth century painting see Alpers (1989). And for a concern with pattern that is in some ways complementary both to Alpers' argument and what is being proposed here see Strathern (1991).

Note 22: I am drawing here on Mol (1998).

Note 23: The same ontological concern with the linking of practices may be addressed to questions of sex and gender (Mol :1991); Hirschauer (1998); Hirschauer and Mol (1995). Other investigations of ontology from different STS traditions include those of Ruth Benschop (Benschop and Law 1997), Donna Haraway (1989; 1991a), Karin Knorr-Cetina (1991; 1992; 1995a; 1995b), Bruno Latour (1993) John Law (1996), Andrew Pickering (1993; 1995) and Helen Watson-Verran (1994).

Note 24: If one were to make connections here into other forms of social theory one would note, in addition to the links with Garfinkel's ethnomethodology, the similarities between this and the analysis of high modern reflexivity.

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