

**Dear friends,**

**About three weeks ago I unexpectedly managed to get access to SASOL's company archives in Sasolburg after months of trying. I have only just started to process this material. This paper is my first attempt at putting together a narrative account of the establishment of SASOL. I haven't been able to step back from the narrative as much as I would have liked. I'll do my best to frame my project better historiographically and theoretically on Wednesday. My apologies for the length and density. I look forward to your feedback!**

**Stephen**

## An Act of Faith: The establishment of the SASOL Project

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*“As we would say in Afrikaans, ons het swaar groot geword.”* – David de Villiers, former SASOL Managing Director

*“Oil-from-coal is probably one of the biggest things before South Africa”*

– Jan Smuts, August 1935

*“Oil is the lifeblood of the nation.”* – Eric Louw, Minister of Economic Affairs, 1954

### **Introduction:**

This paper argues that the establishment of the Suid-Afrikaanse Steenkool, Olie en Gaskorporasie (SASOL), South Africa’s project to produce liquid fuel from coal through a synthetic chemical process in the 1950s was an act of faith on a number of levels.

Firstly, I attempt to show that instead of resulting from the apartheid state’s determined attempt to survive oil boycotts, South Africa’s oil-from-coal scheme reflects a longer-standing ambition, typical of modern nation-states, of securing the country’s fuel autonomy. In this sense, then, we might say that this oil-from-coal project constitutes an act of faith in the name of autarky: the nationalist fantasy of economic self-sufficiency. In the process, I show that rather than being invented out of necessity by apartheid South Africa’s scientists’ as popularly imagined, oil-from-coal has a longer, more international history dating back to 1920s Weimar Germany. Nazi Germany’s synthetic fuel industry and the United States also feature prominently in this story.

I then trace the history of SASOL’s establishment in 1950, focusing on the attempt by Anglo-Transvaal Consolidated Investment Corporation, over nearly 15 years, to establish an oil-from-coal scheme in South Africa. This section of the paper tries to understand why Anglovaal fell out of favour with the government and how this allowed the group of men who would later become the founding figures of SASOL to ultimately bring the oil-from-coal scheme to fruition.

The paper then turns to an analysis of the technical aspects of the oil-from-coal project. As my analysis of the first few calamitous years of SASOL’s operation suggest, neither the politicians nor the technicians responsible for bringing SASOL into being had any real grounds, beyond faith, for believing that the largely untested synthetic processes involved would work., By drawing on the theoretical insights of the historical and sociological literature on the history of science and technology, I attempt a close analysis of the failure of significant processes in the SASOL plant to work. The centrality of faith and trust to the evaluation of technoscientific claims and to catalytic research at SASOL over the last half century emerge as key themes. The final section of the paper begins by trying to explain how SASOL managed to make oil-from-coal ‘work’ and in the process this section becomes a tentative meditation on the significance of a Calvinist work ethic and morality, paternalism and notions of toil, faith and productivity to the SASOL project.

## *Synthetic fuel for South Africa: A long-standing autarkic fantasy*

One of the defining features of the politics of the modern nation state has surely been the dream of attaining national economic self-sufficiency. Doubtless many such autarkic fantasies have been forged in the service of or in response to imperial ambitions and the dependencies and vulnerabilities hazarded by nation states enmeshed in global economic networks. It may sometimes be hard to tell where the autarkic ends and the imperial begins. While the South African state might be seen to have expressed its own 'sub-imperial' ambitions as far back as its invasion of South-West Africa at the start of World War I, and its supposedly national strategic interests during Apartheid were often synonymous with western geo-political priorities in the context of the Cold War, it is possible to identify long-standing autarkic ambitions driving national state policy for much of the twentieth century.

The story of the establishment of SASOL, South Africa's oil-from-coal project is popularly understood to have resulted from the apartheid state's grim determination to ensure its survival in the face of international opposition to apartheid through oil boycotts. In this rendering, necessity is the mother of (white South African) technological invention. Even David de Villiers, one of SASOL's so-called 'founding fathers' and a former Managing Director and company chairman, insisted recently that SASOL was established for this reason.<sup>1</sup> One of apartheid's legacies appears to have been the over-determination of its own politics! The ambitions which lead to the establishment of SASOL were not the uncomplicated expression of apartheid's supposedly parochial politics, although I will argue that a number of the figures central to its establishment cannot be understood without reference to Afrikaner nationalism. Rather, the ambitions underpinning SASOL's establishment can be productively re-conceived as illustrative of South Africa's affinities with a more generic, quintessentially modern aspiration characteristic of nation-states.<sup>2</sup>

In fact, the idea that South Africa could produce oil-from-coal was originally conceived before apartheid as a way to decrease the country's dependence on imported oil and related fuel products. While local newspapers provoked occasional spasms of excitement by publishing claims that oil prospecting might turn up black gold, the country had no known indigenous oil deposits. Importing oil was regarded by most prominent economists as an unfortunate drain on the national treasury. More crucially, having to import the country's entire fuel needs meant that the country was potentially vulnerable during times of crisis to an oil stoppage. After World War I, the threat of such a stoppage because of conflict became a kind of clichéd touchstone in official discourse in South Africa, while the source of the vast majority of the country's (and the world's) imported fuel – the Middle East – becomes a similarly laden signifier for the hazards of dependence on imported fuel as the region was increasingly imagined as perennially 'unstable'. Oil-from-coal therefore reflected an autarkic national politics from its conception. The oil sanctions imposed against the country in the 1970s would certainly stamp a parochial imprint on

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<sup>1</sup> Interview with David de Villiers by Stephen Sparks at Stellenbosch, March, 2009.

<sup>2</sup> For the Franco era Spanish incarnation of this phenomenon, for instance, see Román, Elena San and Sudrià, Carles(2003)'Synthetic fuels in Spain, 1942-66: the failure of Franco's autarkic dream', *Business History*,45:4,73 — 88

SASOL, which would be at the forefront of sanctions-busting activities, but national fuel initiatives such as this also reflect more global 'modern' yearning for the achievement of fuel autonomy.

SASOL's advertising over the last half century, and its more recent 'Proudly South African' campaigns, have constructed SASOL's technology as the cutting edge product of local ingenuity. SASOL has certainly done much of the heavy lifting in terms of operating large-scale commercial synthetic fuel producing plants. The company has also necessarily become a major research organization in its own right, particularly in the field of synthetic fuel production. However, SASOL's technological and scientific prowess in the various fields of synthetic fuel production – what its managers have long referred to as the company's 'know-how' – can be traced back to research and industrial activity in Germany starting in the 1920s and in the United States in the 1940s.

Since the turn of the twentieth century, products derived from petroleum (kerosene, gasoline, fuel oil and lubricants) have been produced almost entirely from the refining of crude oil. Many industrialized countries, including South Africa, explored the extraction of hydrocarbons from oil-shale (a fine-grained sedimentary rock) for a period in the early twentieth century, but the most promising alternative to conventional crude oil refining would be in the field of coal-to-oil synthesis. Most of the important initial laboratory experimentation occurred in Weimar Germany, in the 1920s. Friedrich Berguis, the Nobel prize winning chemist who fled to Argentina after World War II because of his co-operation with IG Farbenindustrie, the company which operated a synthetic oil and rubber plant in Auschwitz, pioneered the hydrogenation of coal at high pressures and temperatures to produce hydrocarbons. In the same period, two German chemists, Franz Fischer and Hans Tropsch, working in a government sponsored laboratory at the Kaiser Wilhelm Coal Institute in Mulheim developed a process involving the gasification of coal to produce 'syngas' (a mixture of carbon monoxide and hydrogen), through the application of intense heat and pressure. This syngas is then converted into liquid hydrocarbon fuels, such as diesel, petrol etc – the products otherwise derived from refining crude oil. A German company called Ruhrchemie bought the patent rights to the Fischer-Tropsch process and built the first commercial plant of its sort at Holten in 1934. IG Farbenindustrie bought the Berguis patent and built the first hydrogenation plant at Leuna in 1927.

Various other smaller German companies worked on variations on coal gasification and liquefaction. Transatlantic traffic in synthetic fuel 'know-how' was initiated in 1927 through a pooling arrangement between Standard Oil of New Jersey and IG Farbenindustrie, Shell Oil, Ruhrchemie and M.W. Kellogg of New York. This, as we shall see shortly, prompted the first American experimentation with German synthetic fuel approaches. In March, 1936 the Luftwaffe leader, Hermann Goring was appointed 'Fuel Commissar' by Hitler, and immediately implemented a 'four-year plan' to make Germany completely independent of foreign sources of fuel. IG Farbenindustrie's hydrogenation approach was favoured over Ruhrchemie's Fischer-Tropsch approach for the portion of fuel supply that was set aside for synthetic production. Hydrogenation was favoured over Fischer-Tropsch because it produced a higher grade gasoline product suitable for use as aviation fuel in Goring's Luftwaffe and because IG Farbenindustrie's managers were key figures in the Nazi military-industrial complex. Unsurprisingly, the hugely ambitious plan floundered. Importing crude oil was still much cheaper than the synthetic route,

despite the stiff tariff the Nazi state imposed on imported oil products in an effort to protect indigenous synthetic production. Nonetheless, by the time war broke out in 1939 there were fourteen hydrogenation and Fischer-Tropsch plants operating at full capacity with a further six plants in the pipeline. These synthetic plants were undoubtedly important to prolonging Hitler's war and achieved impressive annual production outputs before Allied bombing effectively destroyed the existing plants and halted production. Because of its favoured status under the Nazis, IG Farbenindustrie suffered especially heavy overall plant damage through bombing. The company's implication in war crimes (including employing slave labour at its synthetic plants and the fact that its subsidiary manufactured Zyklon B, the poison gas used in extermination camps) meant that the company was quickly liquidated. The Soviet Union seized most of the company's plants falling within the Soviet Occupation Zone while the United States Bureau of Mines undertook a 'Technical Oil Mission' at the close of World War II, dubbed 'Project Paperclip', which used interrogation, plundering of documents and inducement to secure the services and know-how of the German synthetic oil industry's brightest minds who had worked on both Fischer-Tropsch and Berguis synthetic processes. Until this point, interest in synthetic fuel production in the US had been retarded by the apparently endless deposits of petroleum in US oilfields and the entrenched interests and lobbying power of the big crude oil companies. Research and experimentation in oil-from-coal in the US (and indeed, in the United Kingdom) was limited until a later stage, mainly to small-scale pilot plant work by private and government organizations. But as we will see America has a big part to play in the SASOL story, even if its own synthetic fuel industry was stillborn even after its appropriation of German synthfuel know-how. Having been bombed and plundered, the German synthetic fuel industry lay in literal and figurative ruin by the end of World War II. The men who dreamed of establishing an oil-from-coal scheme in South Africa would soon pick their way through these ruins on their visits to Germany in the late 1940s and early 1950s. South Africa was about to pick up where Nazi Germany had left off.

### **South African interest in synthetic fuel**

Research and experimentation with synthetic fuel processes in Weimar Germany peaked interest in expert and industrialist circles in South Africa. In the early 1920s, P.N. Latagan, a former Stellenbosch graduate and later President of the Transvaal Coal Owners Association in Johannesburg had completed his doctoral thesis at Imperial College, London entitled 'The Low-Temperature Carbonisation of South African Coal'. Latagan had visited Germany in the course of his research, and had experimented with some of the methods he had observed and read about in Germany. The first time that oil-from-coal was identified as a potential serious alternative means of deriving fuel was in 1927 when Dr. Frederick Meyer, who would later be the Chairman of the state corporation ISCOR, wrote a white paper for the government from his influential position as technical adviser to the Department of Commerce and Industries describing the oil-from-coal processes being developed in Germany at the time, and their potential for application in South Africa. He strongly recommended the Fischer-Tropsch approach of coal gasification and low temperature carbonisation. Three years later, Pierre Etienne Rousseau, the founding Managing Director of SASOL graduated with an MSc at Stellenbosch for his thesis on 'The Sulphur Content of Coals and Oil-shales'. The interest in coal and oil-shales as alternative sources of fuel ran alongside each other during this period.

Since shortly after Union there had been considerable interest in the production of oil from shale deposits at Ermelo in the Eastern Transvaal. By the mid 1930s the company which owned rights to the majority of the Ermelo deposits was the Anglo-Transvaal Consolidated Investment Company (Anglovaal) which had been established in 1933. Anglovaal formed a subsidiary, South African Torbanite Mining and Refining (SATMAR) to mine and process the oil shale at a refinery in Boksburg, where it would be converted into petrol and solvent products. The shales could produce anything ranging from 20-100 gallons of oil per ton, but it could only operate profitably by refining imported crude oil to supplement its shale operations and by depending on tariff protection by the state. Anglovaal was soon exploring the possibilities of establishing another project aimed at producing an alternative source of fuel: oil-from-coal. Anglovaal's interest in oil-from-coal was peaked by C. Feldman, an English engineer with a background in electric power plant design in England and South America and a budding interest in coal carbonization and oil production. Feldman first came to South Africa in 1926 to assist a German coal carbonisation company interested in the oil shale in the Ermelo district.<sup>3</sup> Feldmann had been following the Fischer-Tropsch work being carried out by Ruhrchemie in Germany, and working through the German Foreign Office in Berlin had obtained an option on their rights in South Africa. Attracted by what he called Anglovaal's "spirit of enterprise" and its involvement in the quite marginal oil shale industry, Feldmann approached Anglovaal's founders, the English-born 'adopted South Africans', Bob Hersov and S.G. 'Slip' Menell, to look into oil-from-coal's prospects. In September 1935 Feldman left for Germany mandated by Anglovaal to examine the performance of the industrial size catalyst chamber at Ruhrchemie's plant, carry out tests on Transvaal coals to determine their suitability for synthesis production processes and to continue further negotiations with Ruhrchemie about the license with Anglovaal.

In 1936, Anglovaal appointed a committee to carry out tests on the catalyst chamber which included Feldman and Dr Hendrik Van Eck, future head of the Industrial Development Corporation, who Anglovaal had managed to lure away from his position as consulting engineer at ISCOR with the promise of exciting work on an oil-from-coal project. The tests, carried out at Ruhrchemie's plant in Holten, Germany were declared a success by Anglovaal and its advisory committee, but a close reading of correspondence between Bob Hersov, the Chairman of Anglovaal and key officials in the national economic cluster ministries reveal subtle shifts in Anglovaal's confidence about the technical and economic viability of the scheme. In August, 1936 even after the 'successful' tests, Hersov wrote:

...the process has not entirely emerged from the experimental stage, and as such will require government assurances until the economics of its potentialities have been established.<sup>4</sup>

James Hertzog's cabinet resigned en masse in September, 1939 with the outbreak of World War II and ruined any chance of Anglovaal's project gaining momentum at this stage. Feldman believed that what willingness there might have been by Anglovaal to establish the industry was frustrated by the fact that Hertzog's cabinet had been divided. Before the war, there were early indications

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<sup>3</sup> 'Memorandum on Oil from Coal in the Union' by C. Feldmann, May 1941

<sup>4</sup> A. S. Hersov to A. Fourie, Minister of Commerce and Public Welfare, 13th August, 1936.

of the obstacles Anglovaal faced in getting full government support for the project – in October 1936, the Acting Minister of Commerce and Industries, Oswald Pirow, had “unexpectedly reduced the customs duty and railage on petrol” which Feldman complained “vitally affected the economics of all oil production in the union.” Pirow’s notoriously “headstrong ways” had been tolerated in the cabinet because he had threatened to leave Hertzog’s government and join D. F. Malan’s Gesuiwerde (Purified) Nasionale Party, a move which could have brought down the government. Hertzog’s Finance Minister, Klassie Havenga indicated that the government wasn’t willing to promise Anglovaal that it could fix the price of petrol in the country at a certain level for the first five years of operation to subsidise the oil-from-coal project, as the apartheid state would later do for SASOL.<sup>5</sup> The cabinet seems to have been more intimidated by the £15 million in government financial support involved, and by Anglovaal’s involvement in the rather unimpressive SATMAR, than it was convinced of the company’s attempts at highlighting oil-from-coal’s importance to the ‘national interest’ especially during times of crisis. During just such a time of crisis – World War II – the plans for oil-from-coal were put on ice.

World War II was undoubtedly a watershed for oil-from-coal’s prospects in South Africa. The war and the instability that followed its conclusion in the Middle East, with the explosion of Arab and Israeli nationalism appears to have heightened what one might call a autarkic common sense among civil servants and politicians in South Africa that securing indigenous fuel supplies had become a matter of critical ‘national importance’. The Anglovaal proposal may have run out of steam before the outbreak of war in 1939, but the war gave the scheme some much needed momentum. In 1947 parliament passed the Liquid Fuel and Oil Act in terms of which the government was empowered to grant a license for the synthetic production of ‘motor spirit’ from coal. Anglovaal was the only applicant for the license. The company appeared, for the time being at least, to be the only conceivable licensee because of the spade work which it had done before the war. As C. Feldman put it in his mid-war memorandum:

Anglovaal...laid a foundation, consisting of rights and advantages and a large stock of valuable information, experience and useful connections, which constitutes an asset of considerable value...this is a solid foundation for an essential national industry, which, though requiring state protection to ensure steady economic conditions, can operate at a reasonable profit and which will be regarded as a sound investment under confidence inspiring administration.<sup>6</sup>

But, as Feldman recognized, Anglovaal had lost contact with Ruhrchemie, the Fischer-Tropsch licencees in Germany because of the war. However, a new series of connections had been opened up in the United States; one of Anglovaal’s founders, S.G (‘Slip’) Menell had lived in New York during the war where he explored American variations of coal-to-oil synthetic processes. Menell and his technical advisors were especially enamoured with the ‘Hydrocol’ bubbling fluid bed reactor process which P.C. ‘Dobie’ Keith (formerly of M.W. Kellogg Corporation of New York) had developed at the company he established, called Hydrocarbon Research Inc. In the late 20s and 30s the Standard Oil of New Jersey, Shell Oil, I.G. Farben,

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<sup>5</sup> Secretary for Commerce and Industries, W.J. Lamont to Chairman Anglo-Transvaal Consolidated Investment Co. Ltd, 27th October, 1936.

<sup>6</sup> 'Memorandum on Oil from Coal in the Union' by C. Feldmann, May 1941

Ruhrchemie and M.W. Kellogg of New York had formed an international pooling arrangement for the interchange of knowledge and patents on hydrocarbon synthesis. As a result of this arrangement, Kellogg had sent 'Dobie' Keith to Germany to spend time at Ruhrchemie, observing Fischer-Tropsch synthesis plant in operation. Keith had effectively developed an American version of the Fischer-Tropsch synthesis. Anglovaal proposed that Hydrocarbon Research Inc. design both the gasification and synthesis sections of the plant. The synthesis section would employ the Hydrocol approach similar to that planned for a plant being built by Hydrocarbon Research Inc. in Brownsville, Texas. For gasification, Hydrocarbon proposed using the generators typically used in the original German Fischer-Tropsch approach. By 1948, however, as the technical details of the proposed Anglovaal oil-from-coal plant were being clarified, the first major disagreements about the appropriate technological and financial direction of the project emerged.

It was Johnny van der Merwe and Etienne Rousseau, both working at Anglovaal's subsidiary, SATMAR at the time, who first broke rank. Rousseau and van der Merwe would be key founding figures in SASOL in later years, with the former serving as the first Managing Director of the company. Hendrik Van Eck had seconded Rousseau from ISCOR to SATMAR specifically to work on oil-from-coal. He was also an industrial advisor at Federale Volksbeleggings; the investment company established by SANLAM to encourage Afrikaner controlled industrial undertakings. Rousseau had previously worked at Federale's fish by-products manufacturer, Marine Oil Refiners. Johnny van der Merwe had in fact worked closely with Rousseau, having been at both Marine Oil Refiners and ISCOR before himself also being summoned by Van Eck to work on oil from coal. Van der Merwe also served as assistant industrial advisor to the Department of Commerce and Industries during this period. Their longstanding close relationship was an indication of the importance of such shared backgrounds to the later foundation of SASOL. Van der Merwe and Rousseau were worried that the coal which Anglovaal intended gasifying in the proposed plant hadn't been tested in the Lurgi-designed generators which the company had decided to employ for gasification.<sup>7</sup> They were convinced that it would be too risky to proceed without further tests and information. The problem was that the Anglovaal project had lost contact with Fischer-Tropsch practitioners such as Lurgi in Germany during the war. Van der Merwe explained:

...we know very little here in regard to the present position of the German firms and it would be unwise to send someone abroad in the hope of finding a Lurgi man somewhere. For all we know the company may have disintegrated and its personnel have been dispersed...if it were possible to conduct actual plant tests in Germany on samples of our coal this would of course be most useful. I believe however that all Lurgi's are situated in the Russian zone and would not be accessible. It occurred to me however that experimental units may exist elsewhere...<sup>8</sup>

Rousseau and van der Merwe warned:

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<sup>7</sup> J.W. van der Merwe to A. Parker, April, 1948

<sup>8</sup> J.W. van der Merwe to A. Parker, April, 1948



...it was unwise to spend the very large capital required on a process which has never been proved operable. It is contended that the only proper way to tackle this problem would be to install a full scale pilot generator and test it out on the coal for several months.<sup>9</sup>

The Anglovaal representatives confronted by Rousseau and van der Merwe insisted that they trusted the assurances given to them by P.C. Keith of Hydrocarbon Research Inc that the coal would gasify. Anglovaal agreed to send a technical advisor to Germany to investigate who reported that while Lurgi had no experience of long-run performance of its generators on the sort of coal Anglovaal intended gasifying, it did not “anticipate any difficulty” with gasification.<sup>10</sup> Lurgi couldn’t carry out pilot test on any coals because the only generators that were set up to operate were in the occupied Russian zone. Anglovaal’s Menell argued that “there is no alternative process to the Lurgi and there is no reason to believe that the Lurgi’s could not be made to work, by the introduction of modifications.” In other words, Lurgi said there shouldn’t be any problems, and Anglovaal chose to trust these assurances. After reading Menell’s report, van der Merwe wrote to Rousseau on a much more upbeat note on the subject of Lurgi gasification. The longer-term possibilities which might result from the further development of gasification seem to have captured van der Merwe’s imagination:

Ek glo tog dat die Lurgi-vergassers wat Anglo Transvaal voorstel...sal werk. Maksimum doeltreffendheid sal seker nie bereik word nie, maar ons sal seker ons petrol kry. Ek is eger oortuig dat navorsing op vergassing noodsaaklik is, nie alleen omdat dit in verband staan met petrol maak nie, maar veral omdat dit so 'n gemeldige invloed kan he op ons toekomstige kragdistribusie en ontwikkeling. Dink maar net wat dit sal beteken om groot kragentrales ver weg van water te kan oprig deur middle van vergassing op die myn (dalk in die myn)...<sup>11</sup>

This particular technical disagreement was therefore resolved by the promise of what oil-from-coal might deliver at a later stage in its development. It was in the financial arrangements for the project that Anglovaal’s scheme hit the wall.

### **Anglovaal falls out of favour**

In 1949 the South African pound was devalued, which massively increased the cost of capital intensive plant equipment. The majority of the oil-from-coal plant would have to be imported. Anglovaal wanted to use its capital resources to develop its recently discovered Free State gold field interests. It therefore needed to raise loan finance overseas for the oil-from-coal scheme. However, raising this loan finance from overseas sources – such as the World Bank – became problematic. For reasons I shall soon address, the newly elected National Party government was not prepared to grant Anglovaal a financial guarantee for the loans. Behind the scenes, Etienne Rousseau had started to raise serious doubts about Anglovaal’s stewardship of the scheme with the highly influential civil servant in the Department of Commerce and

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<sup>9</sup> Liquid Fuel and Oil Industry Advisory Board: Report on a meeting of representatives of the Board and the Anglo-Transvaal Consolidated Investment Co on question of gasification, April, 1948.

<sup>10</sup> Menell memo, 15th July, 1948

<sup>11</sup> J.W. van der Merwe to P.E.Rousseau, 15 July, 1948

Industries, Frans du Toit. Frans du Toit occupied the position of Senior Industrial Advisor to the Minister of Commerce and Industries. He had served in this position since the idea of an oil-from-coal scheme had first been raised at the national level in the mid 1930s, at the beginning of Hertzog's second administration. He would remain in the position until the early 1950s, by which stage he would see the project finally come to fruition with the establishment of SASOL and he assumed the Chairmanship of SASOL's first board of directors. Du Toit had earlier served as an editor of *Die Burger* and Trade Commissioner and Secretary to the High Commission in London, where he was an especially prized recruit of the Broederbond.<sup>12</sup>

Private correspondence between Rousseau and du Toit in February, 1949 indicates Rousseau's unhappiness with Anglovaal. He felt that Anglovaal were "attaching too much value" to P.C. Keith's claims about the most efficacious processes for oil-from-coal. Rousseau felt the same way about Anglovaal's consulting engineer, who he insisted was "disposed to kiss ass over certain ideas and processes."<sup>13</sup> He clearly wasn't very impressed with Anglovaal's judgment of which advice to trust. While Rousseau's colleague, Johnny van der Merwe appeared willing to give Anglovaal the benefit of the doubt about the prospects for Lurgi gasification, for instance, Rousseau clearly still had his own doubts, insisting on the coal being tested in Lurgi's generators, and generally questioning Anglovaal's evaluation of Hydrocarbon's claims.<sup>14</sup> As we will see, within half a decade Rousseau would ironically find himself mired in a battle over the trustworthiness of claims by another American engineering firm about the efficacy of technological processes sold by it to by SASOL.

Rousseau also told du Toit privately that he didn't think Anglovaal would be able to raise the necessary loan capital to go ahead with the scheme, suggesting that the project should be taken over as a state undertaking, under the Industrial Development Corporation. The project could then be financed "by the petrol-using public through a small levy per gallon of petrol." Interestingly, Rousseau seemed to think it would be best to *wait* before going ahead with the construction of a large scale plant. The fuel levy could be used to fund exploratory work on gasification of South African coal in the meantime. Once this work was complete after two or three years, Rousseau argued, synthetic fuel technology in the United States would have progressed to such an extent that "we could erect a factory without any doubt", because by then the hydrocol plant in Brownsville, Texas would have been operating long enough to evaluate an actually existing plant. We could erect a factory *without any doubt*. Rousseau's caution here is in stark contrast to the leap of faith which he would take in a few years when SASOL finally erected its first plant. At this stage Rousseau wasn't even very impressed by the breathless talk of impending international crises and the urgency of the national interest:

I see the synthetic fuel industry in South Africa as a long-term undertaking. It will make no difference to any international crisis during the next ten years.<sup>15</sup>

There were clear signs, as Rousseau's memorandum suggests, that momentum was gathering behind the idea that the oil-from-coal scheme should be a state-run undertaking. In March, 1950

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<sup>12</sup> Interview with David de Villiers by Stephen Sparks, March, 2009 in Stellenbosch.

<sup>13</sup> P.E. Rousseau to F. du Toit, 3 Feb, 1949

<sup>14</sup> P.E. Rousseau to F. du Toit, 3 Feb, 1949

<sup>15</sup> P.E. Rousseau to F. du Toit, 3 Feb, 1949

H.J. Van Eck, Chairman of the Industrial Development Corporation noted that the National Party government was “not disposed to guarantee a private concern.”<sup>16</sup> Van Eck would shortly embark on a trip to the US knowing that while Anglovaal were officially still the licensee for the scheme, the chances of it remaining so were becoming slim. He would enter into negotiations with the World Bank promising only that the government would guarantee any World Bank loan for the project through the Industrial Development Corporation. Van Eck’s excitement about the project as a whole remained undimmed, and the government’s patience was obviously running out:

I am very enthusiastic about the desirability of this industry for South Africa...this scheme promises to be one of the most far reaching projects to be initiated in the country and we should do everything to foster it particularly also as government is anxious to see it go ahead as soon as possible <sup>17</sup>

He wanted to do “further examination” of the hydrocol plant which P.C. Keith was erecting at Brownsville, Texas as well as investigate the work which the American Bureau of Mines had done on synthetic fuel since it plundered Germany’s synth-fuel know-how in ‘Project Paperclip’.

Anglovaal’s fall from favour continued. Writing to Frans du Toit in his capacity as Assistant Industrial Advisor in April 1950, Johnny van der Merwe asked whether Anglovaal needed to continue its involvement in the oil-from-coal project at all: “we know Anglo-Transvaal have done a lot of spadework, but on the other hand, it has had its chance”<sup>18</sup> In April, Frans du Toit wrote to Hendrik Van Eck in the United States, explaining that there was a “strong feeling in Afrikaans-speaking circles”, that the oil-from-coal project “should be a more directly state controlled undertaking, as is the case with Iscor and Escom.”<sup>19</sup> The ‘Afrikaans-speaking circles’ to which Du Toit referred almost certainly included the Broederbond – of which he was a influential member.<sup>20</sup> Du Toit is remembered by SASOL’s key founding figures as a staunch Afrikaner nationalist. At a time when English speaking industrialists who frequented the Rand Club in Johannesburg told H. J. Van Eck “we don’t talk that language”, du Toit would visit as a guest and speak only Afrikaans to everyone, including the waiters. Etienne Rousseau recalls how du Toit would fill in ‘Afrikaner’ next to ‘nationality’ on immigration forms when he travelled overseas and even spoke Afrikaans to the waiters at the Savoy Hotel in London.<sup>21</sup> He had overseen discussions with Anglovaal, a mining house headed by two “Britishers”<sup>22</sup> who had made South Africa their adopted home, for over a decade before the National Party came to power.<sup>23</sup> But with the National Party government installed, the Broederbond more confidently flexing its muscles, and Anglovaal encountering difficulties raising capital for the project, du Toit and his colleagues in government appear to have had sufficient reasons to prefer setting up a

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<sup>16</sup> H.J Van Eck Memo on Oil from Coal Project, 30 March 1950

<sup>17</sup> H.J Van Eck Memo on Oil from Coal Project, 30 March 1950

<sup>18</sup> Van der Merwe memorandum, 11 April 1950.

<sup>19</sup> F.J du Toit to Hendrik Van Eck, 21 April, 1950

<sup>20</sup> Interview with David de Villiers by Stephen Sparks, March, 2009 in Stellenbosch.

<sup>21</sup> Etienne Rousseau Commentary

<sup>22</sup> David de Villiers’ description in interview with Stephen Sparks, March 2009, Stellenbosch.

<sup>23</sup> Du Toit to S.G.Menell, 1st April, 1950

state-controlled corporation to providing financial assistance to the sort of English-speaking mining house which had long been the target of Afrikaner Nationalist rhetoric.<sup>24</sup>

Discussions about the specific details of the form which the state controlled oil-from-coal undertaking should take continued behind the scenes throughout 1950. Frans du Toit wrote to the Minister for Economic Affairs, Eric Louw in March explaining that he felt oil-from-coal was “of such national importance” that he believed it would be acceptable for the state to make “big concessions” to place the industry on a “healthy economic footing” but, crucially that he also wouldn’t be “in the slightest bit panic-stricken if it makes a little more or less profit occasionally”.<sup>25</sup> Dr M. S. ‘Tienie’ Louw, most famous as one of the powerhouses behind the rise of SANLAM and a future SASOL director, argued that the new state corporation shouldn’t be entirely a copy of “a utility company such as Escom” – the government shouldn’t preclude the possibility of “eventual participation by individual shareholders”. Louw warned that the government and the corporation’s directors would have to tread carefully “to avoid undue criticism from private enterprise” as it expanded beyond liquid and gaseous fuels into the processing of by-products.<sup>26</sup> On the question of whether the corporation should be owned entirely by the state or whether the public would be able to apply for a proportion (less than 50%) of shares, Louw argued:

In an investment of this nature the profit motive is predominant as far as the public is concerned but this is not the case with regard to the State. Such a partnership may lead to all kinds of anomalies and may tie the government when it comes to deciding on matters such as the fixing of the selling price and the appropriation of profits.<sup>27</sup>

Reporting on his US discussions with many businessmen and bankers in his capacity as Chairman of the Industrial Development Corporation in June, Van Eck echoed Rousseau’s earlier suggestion that patience might be best: “all these people felt that we should be in no hurry and they would like to see more actual operating results at Brownsville.”<sup>28</sup> With Anglovaal having fallen out of favour, the government announced the establishment of an Interim Committee to bring the coal-to-oil project – now already bearing the name SASOL – finally to fruition. The committee comprised Frans du Toit as Chairman, Dr. H.J. Van Eck (representing the Industrial Development Corporation), Dr M.S.Louw (of SANLAM but also representing the Industrial Development Corporation), Etienne Rousseau, and S.G.Menell and A.P. Faickney (both of Anglovaal). The inclusion of two Anglovaal representatives on the committee was an act of good faith to Anglovaal for the spadework it had done – and Etienne Rousseau would later claim that A.P Faickney was “een van die Engelsprekendes wat 'n aanvoeling met die Afrikaanse kant gehad het, net soos Ian Fleming.” Faickney would also have a place on the first

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<sup>24</sup> Dan O'Meara. *Volkskapitalisme. class, capital, and ideology in the development of Afrikaner nationalism, 1934-1948*. Cambridge University Press, 1983

<sup>25</sup> F.du Toit to Eric Louw, 9th March, 1950

<sup>26</sup> Dr M.S Louw's Opinion, 11th Sept, 1950

<sup>27</sup> Translation of Dr MS Louw's Memorandum re Capitalization of SASOL, 16 October, 1950

<sup>28</sup> H.J Van Eck Memorandum, 6 June, 1950

SASOL board of directors, although his influence on the board was minimal and he would commit most of his energies to nursing his gravely ill wife.<sup>29</sup>

Having been highly critical of Anglovaal's stewardship of the project, Etienne Rousseau was now allowed to take the lead. He was soon in Western Germany, together with Hendrik Van Eck investigating the Lurgi-Ruhrchemie process he had raised doubts about first hand. During his visit he wrote to Frans du Toit: "we are no longer uncertain about the process. The more we think about it, the more we feel that South Africa must have this industry".<sup>30</sup> He felt Lurgi-Ruhrchemie had substantiated their claims about the efficacy of the process. After visiting America, Rousseau produced a comparison of the Germany Lurgi-Ruhrchemie process and the American Hydrocol process (which Anglovaal had become so enamoured with after the war). While in America, Rousseau and Van Eck had learnt that "from all accounts Brownsville is a mess." Hydrocarbon had apparently had problems with the "fluidisation of the catalyst". On this basis they had decided that it would be "dangerous" to consider "any proposal based on the Hydrocol principle". Significantly, Van Eck and Rousseau's evaluation of the different approaches in a memorandum in August, 1950 didn't confine itself strictly to the technological details of the processes but also offered a more general evaluation of the difference between apparently distinct 'national' approaches to fuel:

The Western Germany economy is founded on coal and coal gas and their approach to our problems, which are based on the same raw materials, are realistic. The American thinking habits are bound to petroleum and natural gas economy and they do not see our problems as they should be viewed. This is quite an important point, and Dr. Van Eck and I found the Germany approach to the whole proposition much more in accordance with our views than the American.<sup>31</sup>

Such social evaluations were clearly central to the resolution of technical questions and the evaluation of which technological processes were most appropriate for application in the proposed plant, for reasons which I will explore shortly.

The World Bank couldn't believe that the labour costs for mining coal in South Africa were as cheap as the Interim Committee insisted they were: "they did not seem to appreciate that the whole South African economic set-up is vastly different from that of America."<sup>32</sup> Like Anglovaal before it, the interim committee also had to contend with the politics of intrigue surrounding the entrenched interests and lobbying power of the major oil companies in America. The committee's meetings with the World Bank in Washington were held in secret, outside of the Bank's offices because of the hostility of big oil to oil-from-coal.<sup>33</sup> The interim committee noted that the fact that most of South Africa's oil supplies can from the Middle East gave "the whole project a sense of urgency which it did not have before." But there was also some sense that this

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<sup>29</sup> Rousseau commentary

<sup>30</sup> PER to du Toit, 18 June, 1950

<sup>31</sup> 'Comparison of Ruhrchemie and Hydrocol Processes' Memo by PER. 12 August 1950

<sup>32</sup> Report to the Interim Committee, 16 August, 1950

<sup>33</sup> Report to the Interim Committee, 16 August, 1950 and Etienne Rousseau Commentary

urgency shouldn't force the country into a project that "would not be economical in normal times." But it concluded that the project was "tailormade for South African conditions and present circumstances in our opinion place this undertaking first on the list of projects which should be considered by government."<sup>34</sup> Trusting Rousseau and Van Eck's preference for the German approach to oil-from-coal, the committee recommended the immediate installation of the Lurgi-Ruhrchemie Fischer-Tropsch process because the project could start more quickly, payment could be made in Sterling and "in case of emergency: the German plant could be duplicated in South Africa more easily than the American". The committee anticipated there would be some disappointment that the Ruhrchemie-Lurgi process would produce a smaller proportion of petrol than the Hydrocol process, but it argued the plant would form a basis for future expansion and concluded that the industry was "a practical proposition of great economic possibilities and of prime importance for the future of South Africa."<sup>35</sup>

The interim committee had just dismissed the efficacy of the American hydrocol process and embraced the German Fischer-Tropsch process offered by Lurgi-Ruhrchemie, when in early 1951, on another trip to the United States, Rousseau learnt of a new version of the 'fluidized' synthesis reactor which was being used at Brownsville by P.C. Keith. This synthesis approach had been developed by M.W.Kellogg Corporation of New York. The fluidized synthesis reactor employed at Brownsville had reflected the state of Kellogg's research development in the period from 1943-45 – when P.C. Keith had left the employ of Kellogg. The plant had been erected in 1950 and Rousseau argued that it was already 'out-dated' by the time it started-up. The new Kellogg reactor was, Rousseau noted "a complete break" with the static fix bed catalyst which had been employed in Fischer-Tropsch since synthetic fuel research had begun but also "totally different" to the Kellogg style reactor employed by P.C. Keith at Brownsville.<sup>36</sup> Kellogg had told Rousseau that it hadn't publicized its new synthesis research yet. While the new Kellogg synthesis had only been tested on a pilot plant, Rousseau argued that the company had "wide experience of increasing production from the pilot stage to full-scale commercial operation."<sup>37</sup> There was undoubtedly a substantial amount of risk entailed in adopting the new Kellogg synthesis, but the Interim Committee and Rousseau in particular did not make too fine a point of this. The appeal of the fluid catalyst process for SASOL was that it was explicitly designed for 'motor fuel production' whereas the Lurgi-Ruhrchemie process was really a chemical synthesis plant, designed to produce chemical by-products. One particular cause for concern with respect to Kellogg's process was the possibility of serious erosion taking place in the pipe lines of the reactor vessels. Kellogg told Rousseau it didn't anticipate it being too much of a problem and emphasized its experience as a 'pioneer builder' of fluidized catalyst crackers in conventional oil refineries. Rousseau appears to have been persuaded that Kellogg's experience gave their claims substance. He told the Interim Committee that Kellogg had erected and successfully started-up over fifty plants containing fluidized catalyst crackers.<sup>38</sup> Rousseau felt that there was unanimity

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<sup>34</sup> Report of Interim Committee to establish a South African Synthetic Oil Industry, 2nd Sept 1950

<sup>35</sup> Report of Interim Committee to establish a South African Synthetic Oil Industry, 2nd Sept 1950

<sup>36</sup> Report on the Kellogg Proposal Jan, 1951

<sup>37</sup> Minute 26/1/1951 of SASOL Board of Directors

<sup>38</sup> Report on the Kellogg Proposal Jan, 1951

among the interim committee members that “we would be very unhappy” to not use the services of M.W Kellogg on SASOL’s first project. Rousseau stated “we have complete faith in their ability to do as good an engineering and construction job as has ever been done in South Africa.”<sup>39</sup> Kellogg had a good reputation in the United States, most of all for their “conservatism”, which Rousseau took as a sign that he could trust that they weren’t pushing an untried process onto SASOL.

As a result of their new found liking for the ‘American approach’ offered by Kellogg, the interim committee decided that the SASOL plant would be “one third German and two thirds American”, incorporating the perceived advantages of both the Lurgi-Ruhrchemie and the Kellogg proposals. Kellogg would be asked to act as the co-ordinating construction and engineering contractor.<sup>40</sup> Oil-from-coal was finally getting off the ground. SASOL had taken over Anglovaal’s licenses to the German Fischer-Tropsch processes, and went about securing the license to Kellogg’s fluidized process. The form which SASOL would take, the financial support it would receive (an initial government guaranteed loan of £15 million from the World Bank, via the Industrial Development Corporation) and the financial protection it would enjoy were being finalized. Frans du Toit had already indicated that he didn’t think it mattered how much profit SASOL would make. M.S. Louw had argued that the state wasn’t concerned with profitability. Rousseau himself would sum up his thinking on oil-from-coal as: “artificial economics and government protection”<sup>41</sup> In late 1951 he argued:

This is a nationally supported venture which needs all the help it can possibly get to make it a success. It cannot be regarded as a normal undertaking to get 'fair' treatment. It is entitled to and must get preference.<sup>42</sup>

This would be the organizing principle underpinning the huge amounts of money which the state would pour into SASOL over the next few decades. SASOL style protection was not unprecedented – SATMAR had received tariff protection until Oswald Pirow reduced the rail rate. Rousseau and his colleagues had been paying attention when Pirow pulled the carpet from under SATMAR: “we all wanted a fiscal structure which would protect this industry by law”<sup>43</sup> And they got it. SASOL benefited from tariff protection, a fuel tax levy on every gallon of petrol sold and the state compelled every petrol station on the Highveld to host at least one ‘blue-pump’ providing SASOL petrol.

In late 1950 SASOL had been registered as a legal entity in terms of the Company Act and Etienne Rousseau had been appointed the first managing director. Dr M.S. Louw (director), H.J. Van Eck (vice-chairman) and Frans du Toit (Chairman); ‘Afrikaner sympathizer’ A.P. Faickney (Director) and David P. de Villiers (company secretary) made up the remainder of SASOL’s first

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<sup>39</sup> Factors to be continued in comparing the Kellogg and Ruhrchemie Proposals and Recommendations, 26th Jan, 1951 by PER:

<sup>40</sup> Report on the Kellogg Proposal Jan, 1951

<sup>41</sup> PER Memo 'General Principles, Sasol projects' 29 March, 1962

<sup>42</sup> PER Memo 21 Nov, 1951:

<sup>43</sup> Commentary by P.E Rousseau 20 April, 1974

board of directors. David de Villiers had worked for Rousseau as his legal advisor at Federale Volksbellegings. Rousseau decided to appoint de Villiers as his assistant because he felt he couldn't trust the 'loyalty' of the Anglovaal candidates for the position.<sup>44</sup> Three out of the first seven men who sat on SASOL's board of director's father's were school inspectors in the Cape. This included de Villiers and Rousseau's fathers who knew each other through these circles. M.S. 'Tienie' Louw's father-in-law was related to Rousseau. The majority of these men were originally from the Cape, graduates of Stellenbosch University and members of the Cape's growing Afrikaner professional elite which rose to prominence as a result of the concerted effort within Afrikaner nationalist circles at building up Afrikaner capital.<sup>45</sup> Interestingly, a similar peer-network phenomenon was in evidence among the key 'technical' men who formed the core of SASOL's foundational upper level technical team. I have already commented on the shared industrial experience of a number of these men. Etienne Rousseau, Johnny van der Merwe and Bill Neale-May were all at SATMAR and Marine Oil Refiners together. SATMAR was arguably employing as experimental and economically marginal a process (oil-from-shale) as SASOL later did. These men were, it seems, accustomed to working on the left-field of the fuel industry some time before SASOL. They were also accustomed to working in an industry that required and (in the case of SATMAR) for a time received special state protection to ensure its viability. These common experiences were thus clearly important to the development of a shared sense of purpose among this group of upper-level managers and technicians at SASOL, as Johnny Van der Merwe himself argued: "during those exciting pioneering days powerful bonds were formed with people that would later play key roles in the team that came together to bring the Sasol project to fruition."<sup>46</sup>

### **"Groping with the unknowns of a developmental project"**

The SASOL plant started-up in 1954, but there were 'technical problems' immediately – with the newfangled, but clearly under-tested Kellogg synthesis unit, while the Lurgi-Ruhrchemie plant worked satisfactorily. The Kellogg unit suffered from serious catalyst loss, excessive acid production and precisely the sort of corrosion which Rousseau had asked Kellogg for reassurances about in 1951. Poor quality mechanical equipment was partly to blame for the later, but the Kellogg synthesis generally failed to perform up to the levels guaranteed by Kellogg. The yield of produce per unit of gas was much lower than expected which resulted in a lower output of saleable product.<sup>47</sup> The plant had to be repeatedly shut down and did not run smoothly "for even 48 hours at a stretch" for significant periods of time over the first few years of operation. It was, in short, calamitous. The government and SASOL had weathered a considerable amount of criticism in parliament for the amount of money which the state had committed to the project. The state and SASOL initially tried to present a united front, insisting that these were normal teething problems faced at start-up of any plant, but it quickly became clear that there was something much more seriously wrong.

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<sup>44</sup> Rousseau commentary

<sup>45</sup> Dan O'Meara. *Volkskapitalisme. class, capital, and ideology in the development of Afrikaner nationalism, 1934-1948*. Cambridge University Press, 1983

<sup>46</sup> Van Der Merwe Commentary on 16/4/1974

<sup>47</sup> Memo on Sasol's past and present activities' 6th August, 1959



The full extent of the problem is revealed in the sometimes vitriolic correspondence between SASOL and the Kellogg Corporation in New York. The crux of the issue was that SASOL felt that Kellogg had sold it a dud and that it had misrepresented the efficacy of the synthesis process. Obviously SASOL could only claim this with retrospect. The process that Kellogg had sold to SASOL had only been tested on a small scale pilot plant in New York and it didn't work when 'scaled-up' to the level of a commercial plant, such as the one Kellogg erected for SASOL in Sasolburg. As we have seen a SASOL board meeting had taken note of the fact that the Kellogg process had only been tested on a pilot plant in 1951 but chosen to continue on the basis of Kellogg's "wide experience of increasing production from the pilot stage to full-scale commercial operation."<sup>48</sup> It turns out this was wishful thinking on SASOL's part. Rousseau admitted as much to Frans du Toit in 1954, conceding: "we are not absolved from blame" but insisted that Kellogg "did not tell us the full story" and that they had sold SASOL a scheme "drawn up in a hurry that was in many instances half-baked".<sup>49</sup> In fact, the interim committee, including Rousseau had characterized Kellogg's proposal as "well prepared" at the time. But the sense of betrayal in Rousseau's mind was clearly immense. Writing again to Frans du Toit:

The South African public holds the two of us responsible. We in turn regard Kellogg more than any other single factor responsible for the trouble we are in...Kellogg came to us as an organization with a world reputation for sound and conservative engineering. We accepted them as such.<sup>50</sup>

Ultimately the judgment of others that Kellogg had a good reputation was all that Rousseau and the rest of the interim committee had to go on. They could witness the pilot plant at work in New York, as Rousseau had done, but they had no more to draw on to convince themselves that the 'scaling-up' from pilot plant to commercial plant would work other than good, old-fashioned trust and faith. Trust, and faith with all the social mediation which they entail, were what Rousseau et al went on when they decided to install the Kellogg synthesis at its plant in Sasolburg. The now quite vast literature in the history and sociology of science and technology has convincingly shown that trust and faith are perhaps the single most important criteria at work in the way scientists and technologists evaluate the efficacy of scientific or technological claims, more so even than evaluation of the technical details of particular claims.<sup>51</sup> Part of the reason for the recourse to trust or faith is the difficulty of replicability and induction – how can a scientist test the veracity of a claim or the efficacy of a technology if it is so difficult to replicate the particular, contingent conditions which go into ensuring the 'successful' execution of an experiment, for instance. I will not go further into the details of the theory of 'experimenters regress' here.<sup>52</sup> What is important to underline, is that there are a

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<sup>48</sup> Minute 26/1/1951 of SASOL Board of Directors

<sup>49</sup> PER to F.du Toit, unknown date in 1954

<sup>50</sup> PER Memo to F. du Toit, 26 May, 1955

<sup>51</sup> Steven Shapin and Simon Schaffer. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton University Press, 1985) and Steven Shapin. *A Social History of Truth: Civility and Science in Seventeenth-Century England* (University of Chicago Press, 1994)

<sup>52</sup> Harry Collins, *Changing Order: Replication and Induction in Scientific Practice*, London: Sage, 1985

great number of possible obstacles to the ‘successful’ replication of pilot plant tests, even within a single laboratory at Kellogg’s headquarters in New York – any number of factors might influence the ‘success’ or otherwise of a pilot plant test, including the relative skillfulness of the researchers conducting the tests, the reliability of the catalyst material etc. And there are even more possible obstacles to the successful ‘scaling-up’ from pilot test plants in a laboratory in New York in 1950 to full scale commercial level plant in a field in the middle of the Free State in 1954.<sup>53</sup> The leaps of faith required in the move from pilot to commercial scale plant are not inconsiderable. Both trust and faith are at work in this account of reactor research at SASOL by Mark Dry, one of the world’s leading practitioners of Fischer Tropsch catalysis research:

We built a great big perspex model with all kinds of different gas distributors to decide what was best. It fluidized well. We sorted out gas distributors. We got the top brass to look at it. And we said that this is the reactor we should be using. Somehow, I fooled them into doing it! They were not equipped to evaluate it, but they were impressed anyway. They could not possibly decide from what they saw that it would work, and nor could we, to be honest – but they had faith in our experience. They said go ahead and build it. You could not expect a technical decision from them; they went by our opinions...we might have made a horrible balls-up. You build a demo; it seems to be good. The proof of the pudding is in the commercial demonstration.

Unlike the ‘top-brass’ in Dry’s account, Etienne Rousseau possessed considerable technical knowledge with which he tried to evaluate Kellogg’s proposal. But in truth, even Kellogg’s own researchers who worked on the pilot plant in New York could not evaluate the likelihood of the scaling-up succeeding or failing. They too had trust and faith – and doubt.

Fortunately, as Rousseau realized, SASOL had what he called a “very patient” government behind it. Sasol had been established in 1950 with £15 million pounds of capital secured via a World Bank loan guaranteed by the government through the Industrial Development Corporation. Three years later, before the plant had even started up, this had controversially escalated to £28million. Four years later (by 1958) it was £48million. Because of the operating problems SASOL was leaking millions of pounds annually, all the way through to 1958. The state had committed itself to pouring money into SASOL, and there was even some sense that there would not necessarily be a return on some of this money. But committing such a large amount of money to SASOL also meant the government was increasingly defensive of its investment, and anxious. SASOL was after all supposed to be producing considerably more petrol than it was with just a quarter of the plant (the German part) working, and the delays caused by the technical difficulties were causing a “serious deterioration in the financial position of SASOL.” There were also serious concerns raised by consumers and consumer associations about the quality of SASOL’s petrol.<sup>54</sup>

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<sup>53</sup> Interview with Mark Dry by Stephen Sparks

<sup>54</sup> 13 June, 1956 Memo by D.P de Villiers - 'Criticism of our Petrol'

Rousseau explained to Dr. van Rhijn, Minister of Economic Affairs that SASOL was dealing with one of the most “difficult technical undertakings in the world”<sup>55</sup> Faced with increasing criticism in Parliament and the press, Rousseau instructed SASOL’s public relations department to step up ‘propaganda’ emphasizing SASOL’s ‘technological prestige’ – one of the earliest moves to construct SASOL’s technological prowess in popular imagination, just as the company (in partnership with Kellogg) battled to make the plant operate properly.<sup>56</sup> SASOL’s charge was that Kellogg had failed to meet the guarantees it had made in the contractual agreement between the companies. Kellogg had sent a group of engineers and plant operators to Sasolburg to work on the start-up of the plant. A cosmopolitan mix of engineers, artisans and operators had been employed by SASOL to operate the plant because of the lack of expertise in this field in South Africa at the time. Chiefly from Germany, Holland, the United States and United Kingdom, these men were expected to train local staff to operate the plant once they departed. David de Villiers commented at a later point: “hulle het 'n lot boerkinders hierso op die plaase gaan vang en hulle geleer on die ding te doen. Hulle het 'n lot kombers kaffers hiernatoe gebring wat vandag heeltamal gesofistikeerde mense is.” Kellogg proposed sending more of its ‘best technical men’ to work on getting the plant to operate properly. Rousseau objected to this “army-commander approach”, arguing that it would be better “to consult with SASOL first and then to bring out in agreement with the SASOL the few selected experts to work on specific problems with the SASOL personnel.” Rousseau bristled at suggestions by Kellogg that the synthesis unit wasn’t working properly because of the incompetence of SASOL’s own staff.<sup>57</sup>

With SASOL required in terms of the contract to pay Kellogg to do further work on improving the plant’s operation, Rousseau suspected that SASOL was “paying for Kellogg’s experience”.<sup>58</sup> Certainly, much of the appeal of the SASOL project from Kellogg’s perspective across the Atlantic must have been the opportunity it afforded the company for experimentation in oil-from-coal on a scale which it would not otherwise have been able to undertake in the US, where big oil’s hostility to synthetic oil was so entrenched. In truth, it might be argued that the South African government and its taxpayers paid, while Kellogg experimented. Rousseau’s letters to Kellogg grew increasingly angry and accusatory, highlighting the fact that its good reputation – which he had trusted – had started to be sullied in parliament and the local media in South Africa. This prompted Kellogg to insist in 1956, that SASOL knew that it was buying a “developmental unit” – and that both company’s were “groping with the unknowns of a developmental project”.<sup>59</sup> Rousseau was scandalized:

I do not think that anybody in sound mind can deny that Sasol has been let down to a quite fantastic degree by the M.W.Kellogg Company. It is not a matter of a developmental unit, but a series of mistakes, some of which were incredibly elementary.<sup>60</sup>

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<sup>55</sup> PER to Dr van Rhijn, Minister of Economic Affairs, 2 Sept, 1955

<sup>56</sup> PER to van Rhijn, 3 November, 1955

<sup>57</sup> PER Memo regarding Discussions with Kellogg Representatives

<sup>58</sup> PER to Kellogg, 15th Dec, 1955

<sup>59</sup> PER 28th march, 1956 Memo

<sup>60</sup> PER to Kellogg, 13th July, 1956

In 1956, SASOL even explored the possibility of suing Kellogg for ‘misrepresentation’ and ‘fraud’. Rousseau insisted: “we would have been very wary indeed of buying the Kellogg process if we had known the facts.”<sup>61</sup> But the ‘facts’ Rousseau had in mind were not in fact knowable at that time. Kellogg claimed that its pilot plant worked, Rousseau saw evidence in New York to suggest that this was true. Kellogg claimed they could ‘scale-up’ from the pilot plant to commercial scale successfully. Kellogg could only point to other instances of it having successfully ‘scaled up’ – its experience – to support this claim. Rousseau could only rely on the opinions of others he trusted to bolster his belief – his faith – that Kellogg *could* scale-up successfully. Rousseau didn’t quite see it this way himself, clearly – but he admitted “we have been very rudely shaken in some of things in which we have had confidence...we have put all our eggs in the Kellogg basket...our eggs have been thoroughly smashed.”<sup>62</sup> SASOL had persuaded Kellogg to restart work on its pilot plant in New York, in addition to working on the commercial scale plant in Sasolburg. SASOL had also built its own small pilot plant in Sasolburg by 1957, but Rousseau explained “the behaviour and development of the catalyst on the pilot plant is not the same as on the commercial plant. That, as a matter of fact, is our fundamental problem.”<sup>63</sup>

The difficulties SASOL had encountered with the Kellogg synthesis had acted as a spur to the company developing its own research programme. The Kellogg debacle had made SASOL’s managerial and technical elite quite a bit more skeptical – as Etienne Rousseau explained in 1958: “we are no longer prepared to accept anybody’s bright ideas as gospel.”<sup>64</sup> The company also entered into secret research arrangements with other organizations overseas in the hope of soliciting fresh perspectives on the company’s problems. The difficulty with these arrangements (besides the policing of proprietary information which they necessitated) was that the particular problems SASOL was encountering related precisely to the local character of techno-scientific practice in Sasolburg. In Rousseau’s words:

Industrial problems, particularly at SASOL’s present stage of development, cannot be packaged and handed over to a research institution thousands of miles from the site where the problem occurs. Our problems are still very much integrated with our daily operations and local circumstances.<sup>65</sup>

This, of course is the point – techno-scientific practices are necessarily local in character, contingent and embedded in context – for all of the universalizing rhetorical claims often accompanying these same practices. This contingency is precisely the challenge for techno-scientific practitioner’s endeavoring to universalize their practices.<sup>66</sup> From this perspective,

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<sup>61</sup> 29th, August, 1956 Memo by PER

<sup>62</sup> PER to Kellogg, 21st June, 1956

<sup>63</sup> PER to President of Scientific and Industrial Research, London, 14th May, 1957.

<sup>64</sup> PER memo re Lurgi discussions, 4th July, 1958

<sup>65</sup> PER to J.C. MacIntyre, 5th June, 1957

<sup>66</sup> Bruno Latour, *Reassembling the social: an introduction to actor-network-theory*. Oxford; New York: Oxford University Press, 2005

Kellogg might be said to have encountered particular difficulty in its attempt at universalizing or extending its synthesis process beyond its laboratory in New York.<sup>67</sup>

So, how did SASOL make the act of faith that was oil-from-coal work? One answer is that the extent to which oil-from-coal's 'works', is in fact always contingent on the oil price. It is significant, for instance, that after Sharpeville – as the threat of international oil sanctions against apartheid become a more tangible possibility – SASOL advised the government that importing crude oil in bulk which could then be stored in disused mine shafts was far more economical than building further oil-from-coal plants.<sup>68</sup> For much of the 1950s and 1960s oil was plentiful and cheap, interest in oil-from-coal diminished considerably and coal was falling out of favour as a fuel source. In the mid 1960s, Etienne Rousseau was told by an industrialist on an overseas visit that “for any country, the possession of coal is an embarrassment these days, like having colonies!”<sup>69</sup> The oil shock of 1973 and the overthrow of the Shah in Iran (South Africa's main source of imported crude oil) would change the autarkic arithmetic immeasurably, prompting the South African government to ask SASOL to go ahead with the construction of first SASOL II and then SASOL III in the late 1970s. The willingness of the South African state to protect and bankroll SASOL also doubtless helped make oil-from-coal work, by providing its researchers with the breathing space and the resources needed to get it to work.

This last point is exceedingly important. SASOL made oil-from-coal 'work' – in the technical sense – through toil, and yet more faith. Historians and sociologists of techno-scientific practices help us to re-conceive of science and technology as something closer to crafts: more tinkering, hard slog and guesswork than the transcendent fruit of individual genius. Mark Dry's firsthand account of catalysis research at SASOL over the last half century supports this vision. Getting SASOL to work took immense labour – but the point of the STS literature is that the extent to which any technological or scientific process 'works' is always contingent, and thus dependent on continued labour. This labour may not always be physical – getting SASOL to work seems to have taken a great deal of mental labour, coupled with the tinkering typical of laboratory work – but techno-science is rarely as simple as entailing some great invention, and then sitting back and watching it work.

Efficacy is also a sliding scale. A process, such as catalysis and synthesis can always be made more 'efficient', more 'cost-effective', more 'productive' – and so it has proved at SASOL. The first decade of its existence was dedicated to getting the Kellogg synthesis to 'work'. By 1958 it was 'working' in as much as it wasn't breaking down all the time, as it had done for the previous four years. But SASOL wasn't happy with the “efficiency of conversion” of the Kellogg synthesis process – the yield of produce per unit of gas was much lower than Kellogg's design figures had promised, which means that there was a lower output of saleable product. SASOL started committing £50, 000 per year to laboratory and pilot plant research

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<sup>67</sup> Latour, B. 'Give me a laboratory and I will raise the world' in Mario Biagioli, ed., *The Science Studies Reader*. New York: Routledge, 1999[1983]

<sup>68</sup> PER to General Manager, Rhodesian Industrial Development Corporation, 10th May, 1967

<sup>69</sup> J.W. van der Merwe (Assistant Gen Manager Operations, SASOL) to H.N. Hepker, Anglo-American Corporation of SA, 17th July, 1964

on synthesis in the hope – the faith – of improving the ‘efficiency’ of the Kellogg process. Dry’s account highlights the importance of faith – the belief, in this case that a techno-scientific process will succeed, or can be made to succeed. Once SASOL started building its own pilot plants, it would have to contend with the same ‘scaling-up’ problems which had characterized the ‘scaling-up’ of Kellogg’s synthesis in 1954.

Talk of the endless work and the long hours that were required to make the oil-from-coal project succeed is a central feature of the narratives of managers and technicians and their wives and partners. To listen to Etienne Rousseau recount the early years at SASOL is to hear the toil discourse constructed as a heroic, masculine narrative:

Had SASOL been standing in any other country...I mean, in a heavily industrialized country, people would certainly have walked off for other jobs. They would not have seen the thing through. But we virtually had a captive senior staff, and they had to see it through. When I walked through the works-office on a Friday afternoon, quarter to seven, the men were still there. It went on for years that they were at the factory every day, Saturdays and Sundays as well. I recall Neale May and John Carr and Johnny van der Merwe coming to see me at half past five one afternoon, having had three failures in getting a unit to work that day, and John saying to me, ‘Etienne, do you think we’re any good?’ What a battle it was! South Africa should have the finest soldiers in the world. I saw men standing at the control board with their backs to fire and explosions while shutting down the plant. It took some doing. At section 800 I saw men rushing through fire to close valves. They were good men.<sup>70</sup>

One of Etienne Rousseau’s three daughters, Adele Retief remembers this time as:

...a very trying time. A terrible time. The whole SASOL thing was an act of faith. Nowhere in the world was this process commercially successful so it was very difficult. The people worked all through day and night. And they worked together as a team. I remember that I saw my father many times on his knees in his room, in his bedroom and people said they found him in his office on his knees. So it really was an act of faith. He was praying. The people also prayed together. The families and the wives all had to support them. I remember my father...he went into the factory very often. I remember at Christmas when we came out of church and we went to the factory and greeted everyone and said thank you for what you're doing.<sup>71</sup>

At times, it seems even Rousseau’s own faith sometimes faltered, as he admitted:

I must tell you honestly that there were times in Sasol’s early years, times when we had trouble, big trouble, when I felt that my charge was to keep up the courage of our men. I certainly could not allow myself a moment’s despair. One afternoon a week I drove over to chat to Van Eck or to Frans du Toit in Pretoria – just to pick up pluck. A lot of nervous energy went into the project.<sup>72</sup>

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<sup>70</sup> Rousseau commentary

<sup>71</sup> Interview with Adele Retief by Stephen Sparks, Sasolburg, 2008.

<sup>72</sup> Rousseau commentary

Parliament and local newspapers were full of claims that SASOL was already a white elephant after just a few years operation. While the state had long since decided to support SASOL financially regardless of whether it turned a significant profit or not, the Minister of Economic Affairs, the indomitable Eric Louw (who had hoped SASOL would name its company town after him) desperately hoped that Rousseau could ease the mounting political pressure, by speaking to the National Party parliamentary caucus. Rousseau was meant to reassure the caucus that SASOL *would* work. Rousseau told the caucus: “we are absolutely certain that it will work, but...anything can happen.” When Rousseau was finished, Louw told Rousseau he had given a very “bad presentation” – he was supposed to tell the caucus that the thing would definitely work. Rousseau replied: “I am not a politician, I’m an industrialist”.<sup>73</sup>

And throughout this period, as Adele Retief’s comments suggest, there was the constant, often taken for granted labour of women - of secretaries dictating high-level SASOL contracts in late night meetings, of SASOL’s social worker consoling the widows of employees killed in accidents, or reporting inebriated plant operators; the affective labours of support, of childcare, of sustenance and cleaning which allowed SASOL’s managers and technicians to work as hard as their narratives insist they worked to “make the damn thing work.”<sup>74</sup> Less visible in the accounts of SASOL’s managerial and technical elite are the labours of white working class artisans conducting maintenance work on the plant, welding it back together, also so it could be made to work. Or the labour of black coal miners toiling in SASOL’s coal mine, paid so little for their labour that the World Bank couldn’t believe the cost of mining coal was so low. Any act of faith rests on certain basic assumptions and treats certain questions as settled and unproblematic – the pliability of African labour (at least until the 1970s) was one of the key assumptions underpinning SASOL’s act of faith.

Among SASOL’s devout Afrikaans-speaking managers, such as Etienne Rousseau, David de Villiers, the discourse of toil is perhaps suggestive of a kind of Calvinist work ethic. Both Rousseau and de Villiers’ father’s were school inspectors in the rural Cape – men of self-discipline, thrift and application. These men appear to have grown up in homes characterized by the valorization of austerity and diligence. Sasolburg’s civic culture frowned heavily on public displays of ostentation or pretention.<sup>75</sup> Max Kirchhofer, the Swiss architect commissioned by SASOL to design its company towns, insisted that the Sasolburg municipality strictly regulate advertising signage in the town’s central business district to prevent its descent into greater conspicuousness: “with coloured lights assailing the passerby with spurts of flashes in every increasing intensity”<sup>76</sup> Etienne Rousseau was a fierce critic of the corporate expense account throughout his career, and of what he perceived to be a broader culture of wasteful, wanton consumerism in general. In the 60s and 70s he bemoaned what he perceived to be the declining value attached to ‘austerity, frugal living, wise saving and the concept of duty.’ He railed against “modern permissiveness”, which apparently included

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<sup>73</sup> Rousseau commentary

<sup>74</sup> Rousseau commentary

<sup>75</sup> Interview with Rita Marais, Sasolburg, 2008

<sup>76</sup> M. Kirchhofer to Town Clerk, Sasolburg, 17th January, 1966

“wildcat strikes, unjustifiable wage demands, fewer working hours and increased leisure.”<sup>77</sup>  
In 1971 he insisted:

There is no such thing in our world as universal rights. But there are obligations.  
Experience has taught that there is no joy in people's rights, only frustration. Man finds his happiness in his obligations.<sup>78</sup>

Cheap oil (and parents who let children have what they want!) were the primary culprits for the “cult of consumerism” which had given rise to the “rising expectations” of the “masses of the world” who couldn’t comprehend why this growth was unsustainable and destructive of man’s soul. The “more is better” philosophy had to give way to the “enough is best” approach.<sup>79</sup> Rousseau welcomed the oil price shock – not only because it made oil-from-coal more economically viable – but because it might help shock the world out of its irreverent, ill-disciplined “spree of affluence”. The oil orgy was over and now SASOL could lead the way in the production of liquid and gas fuels via the synthetic treatment of coal.

By the 1960s, Rousseau’s Calvinist work ethic seems to have been coupled with a quite American, mid twentieth century preoccupation with ‘productivity’. SASOL had started undertaking studies of ‘Bantu productivity’ at its coal mine and in personnel training and development more generally, and Rousseau (who was a close advisor to a succession of Prime Ministers throughout this period) spoke frequently in public of the importance of increasing productivity through higher levels of skill and training. He believed that “economic progress” could only be achieved if the “whole population appreciates the importance of productive work...there is no substitute for intelligent hard work.” What was at issue, he argued was “an attitude of mind” – a work ethic – which could only come from education of the “old-fashioned duty-before-pleasure kind”.<sup>80</sup> The twinning of the Calvinist work ethic with the preoccupation with ‘productivity’ seems to have lead Rousseau and SASOL slowly towards a more critical stance towards Apartheid’s job reservation. As early as 1962, Rousseau was arguing in public speeches covered in the press that ‘non-whites’ needed to be trained for ‘more advanced work’ and implying that the reservation of well-paying jobs requiring minimal training for whites was one of the reasons why so many white children left school early. He warned this was a “dangerous phenomenon for the survival of the whites.”<sup>81</sup> The shortage of skilled labour in the South Africa was especially keenly felt at SASOL. The company has encouraged the immigration of artisans, engineers, scientists and chemists from overseas throughout its history. The area where the strain was first felt most keenly was with respect to artisans. By the mid 1970s, the company was starting to push against the colour bar, getting special permission from the government to train and employ Indian and ‘Coloured’ men as artisans at its new crude oil refinery in Sasolburg and the new massive SASOL II and III plants in Secunda. By the late

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<sup>77</sup> ‘Good Life Must Be Worked for’ *The Star* 12/8/71

<sup>78</sup> ‘Permissiveness in industry attacked’ *Natal Witness* 16/5/1971

<sup>79</sup> ‘End World Spree, calls Sasol boss’ *Rand Daily Mail*, 29/8/1974

<sup>80</sup> PER to C. Thompson, 6th March, 1969

<sup>81</sup> ‘Sasol Baas bepleit meer en beter arbeid’ *Die Burger*, 24<sup>th</sup> July, 1962



1970s, Rousseau was bemoaning the fact that B.J. Vorster was no longer as receptive to “new ideas” about reforming apartheid, as he had once been.<sup>82</sup>

But how did the Calvinist emphasis on work and austerity twinned with notions of ‘productivity’ gel with the fact that SASOL, in David de Villiers’ words “suckled at the teat” of the South African state for so much of its history?<sup>83</sup> Etienne Rousseau had argued in 1962 in an internal memorandum that there were “lots of opportunities” open to SASOL for expansion into chemical by-products, outside of the realm of oil-from-coal’s “artificial economics”. He warned that the company should be careful not allow an “artificial industry” to “hang around our neck” for too long, as had been the case with SATMAR which had suffered greatly after its railway tariff protection decreased.<sup>84</sup> When SASOL was being established, Sanlam’s M.S. Louw had argued that there should be some flexibility to allow the company to sell shares to members of the public at a later date (as it did in 1979). There seems to have been some sense among the group of men who were central to founding the company that protection would be more important in the earlier part of the company’s history, as oil-from-coal’s viability was proven. When David De Villiers accepted the Rand Daily Mail’s ‘Business Achievement Award’ in November, 1975 on behalf of SASOL, he expressed his surprise that the award had been give to a “state financed organization” at a time when there was so much talk in South Africa about the dangers of “creeping socialism”.<sup>85</sup> Free-market enthusiasts commonly argued that state-financed organizations lacked the “discipline of competition”, resulting in “technological stagnation” and “general incompetence”. SASOL, de Villiers insisted, *had* in fact been “subjected...to the discipline of market forces”:

In the same manner as any other company we had to develop a commercial approach of cost-consciousness, market competitiveness and a continuous striving for productivity. During the first eight years of our existence we were always short of money and were compelled to do things on a shoestring. In this process of growing up we were taught to be self-disciplined and to live frugally. We were indeed fortunate to have had my predecessor as managing director, the most self-disciplined man I have ever known...Etienne Rousseau, the man who instilled a climate of cost-consciousness and financial responsibility in our organization.<sup>86</sup>

There was definitely some conflation here between the “discipline of competition”, or the “discipline of market forces” and the discipline entailed in careful accounting so as to be able to explain to the government where every penny of public money had been spent. This slight of hand may have been important to de Villiers and Rousseau’s rationalization of SASOL’s

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<sup>82</sup> Dan O’Meara. *Forty Lost Years: the apartheid state and the politics of the National Party, 1948-1994*, Ravan University Press, Johannesburg, 1996, 195.

<sup>83</sup> De Villiers interview by Stephen Sparks

<sup>84</sup> PER Memo 'General Principles, Sasol projects' 29 March, 1962

<sup>85</sup> D.P de Villiers, Rand Daily Mail Business Achievement Award, 24 Nov, 1975

<sup>86</sup> D.P de Villiers, Rand Daily Mail Business Achievement Award, 24 Nov, 1975

receipt of state subsidization and protection. When he was directly quizzed on the issue, Rousseau insisted that he was committed to “competitive private enterprise”<sup>87</sup> but that “government sponsorship” of a particular industry” for “certain phases of business activity” was sometimes necessary where that industry was of “strategic importance.”<sup>88</sup> Unfettered capitalism certainly didn’t sit well with Rousseau’s Calvinist moral preoccupations. Writing in the mid 1960s he believed that during the nineteenth century, “the average business man was out to make money regardless of the effect on governments, countries or peoples.” He recognized that the popular image of businessmen was that they were “ruthless materialists”, only interested in “the making of money”, calling for a “responsible attitude” among business men to ensure that the public wasn’t left with the impression that they were being “taken for a ride”.<sup>89</sup>

Rousseau, De Villiers and the company’s third director, At Stander all shared a kind of Calvinist paternalistic instinct, as reflected in their numerous philanthropic projects. The claim that SASOL “was a family” in its early years, repeated ad nauseum to me in interviews and in the company’s newsletters shouldn’t, of course, be taken at face value. I have however, tried to suggest that this sentiment reflected an important sociological phenomenon among the foundational top-level figures in the company. The metaphor of SASOL as a family also helps us understand the paternalistic character of SASOL’s relationship to its employees and to its company town for at least the period up to it selling its shares on the Johannesburg Stock Exchange, in 1979. The familial metaphor has legs beyond the upper echelons – retired white artisans and black mine workers who worked for SASOL over a long period of time (up to four decades in some cases) describe their relationship to the company to me in precisely the idiom of the family with SASOL in the role of the father that distributes privileges and punishment to his children. Of course SASOL certainly had its favourite children – white workers received job protection for much of this time period and better subsidized housing than black workers. Retired black workers narratives feature plenty of punishment – dad was undoubtedly violent, racist and hostile to unions – but also a nostalgia for a time when food and accommodation were provided ‘free’ to black employees by the company. Both black mine workers and white artisans bitterly complain of how the company ‘dropped’ them when it implemented large scale retrenchments and cut pensions and housing subsidies as part of its gradual shift from a state corporation to a company listed on the stock exchange, increasingly concerned with profit margins (though it was still receiving state subsidization.)

These shifts are spoken of by former employees as a devastating breaking of a compact between a father and his loyal sons. With apartheid’s end, the new ANC government announced that SASOL’s subsidies (which amounted to R1.1 billion annually by the 1990s) would end in 1997. SASOL is now listed on the New York Stock Exchange and the last few decades of research in synthetic fuel technology have allowed it to develop the German and American processes it originally bought in the 1950s to such an extent that the company is

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<sup>87</sup> PER to C. Thompson, 7th Sept, 1966

<sup>88</sup> PER to C. Thompson, 7th Sept, 1966

<sup>89</sup> PER to C. Thompson, 7th Sept, 1966

now selling its own proprietary coal-to-liquid and gas-to-liquid synthetic fuel technology around the world. The company is also building and operating coal-to-liquid and gas-to-liquid plants throughout the world, most recently in China and India. Etienne Rousseau could perhaps never have conceived of these developments. Longstanding residents of Sasolburg and employees of the company who have witnessed these shifts insist that there have been profound, unsettling changes in the way SASOL relates to its employees and towns. This nostalgia is shared by both black and white former employees; residents of the old white suburbs of Sasolburg and of Zamdela township. While the company is still very Afrikaans, its workforce is increasingly diverse and under pressure from the ANC it has been forced to appoint black men and women to high level managerial positions. SASOL still makes gestures towards philanthropy, and the company still wields considerable power in Sasolburg and Secunda, but the paternalism and moral preoccupations which SASOL's management shared for much of the last half century appear to no longer have the same purchase as they once did. Perhaps the "discipline of market forces" has properly come to Sasolburg, after all?