

A Siberian reality check on open source information

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Abstract Open Source Information (OSI) and Open Source Intelligence (OSINT) are attracting enormous interest from the business, military and political intelligence communities. OSI and OSINT offer the prospect of delivering valuable intelligence, from so-called open sources such as newspapers, experts, and online databases. While OSI and OSINT may offer considerable potential when employed to produce information on foreign countries, they are totally dependent on the researchers' and analysts' understanding of the target country's history, politics and society.

A research project on the BAM (Baikal-Amur Mainline) Railway in eastern Siberia provides a practical example of OSI. The project involved researching a book on the BAM (Baikal-Amur Mainline) Railway in eastern Siberia using OSI alone as it was impossible to visit the region. The 3,084km BAM traverses an almost unpopulated region which had been virtually closed to Westerners since it became a major gulag zone in the 1930s. Once the book's research was underway, it became clear that much of the English language published material was ill-informed and contradictory. After the collapse of the Soviet Union and the relaxation of travel restrictions, it was possible to validate the information gathered. This led to a number of surprising findings about the accuracy and comprehensiveness of the material collected outside Russia.

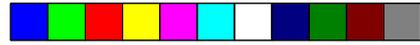
Introduction

Open Source Information (OSI) and Open Source Intelligence (OSINT) are the latest trends sweeping the business, military and political intelligence communities. Conferences are being held on them, large organisations are starting to employ them in a strategic fashion and academics are researching the techniquesⁱ. OSI and OSINT offer the prospect of delivering valuable intelligence, from so-called open sources such as newspapers, experts, online databases, commercial imagery and technical publications, at a fraction of the cost of conventional intelligence techniques such as industrial espionage, spies and satellites.

While OSI and OSINT are not new concepts, they have been largely ignored for the last 40 years as traditional espionage tools have dominated the intelligence gathering processⁱⁱⁱ. OSI and OSINT were rediscovered in 1992^{iv} and since then have increased their profile. The main exponents of them, Robert Steele and Mark Lowenthal, state that:

'OSINT results from the integration of legally and ethically available multi-lingual and multi-media sources (ie OSI), with the heretofore largely secret processes of national intelligence: requirements analysis, collection management, source validation, multi-source fusion, and compelling presentation'.¹

A research project on the BAM (Baikal-Amur Mainline) Railway in eastern Siberia is a practical example of OSI. The project involved researching a book on the BAM (Baikal-Amur Mainline) Railway in eastern Siberia using OSI alone as it was impossible to visit the region. The 3,084km BAM traverses an almost unpopulated region which had been virtually closed to Westerners since it became a major gulag zone in the 1930s. Once the book's research was underway, it became clear that much of the English language published material was ill-informed and contradictory. While a few of the errors it contained may reflect highly on the creators of disinformation,



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most of it appeared to be due to sloppy research and reporting.

After the collapse of the Soviet Union and the relaxation of travel restrictions, it was possible to validate the information gathered. This led to a number of surprising findings about the accuracy and comprehensiveness of the material collected outside Russia. The analysis of the project is divided into three main components of OSI: discovery, discrimination and validation. From an OSI perspective, nine lessons can be drawn from the project. While the paper is based on experience in the Soviet Union and Russia, the lessons are equally relevant to other non-English speaking countries.

Background

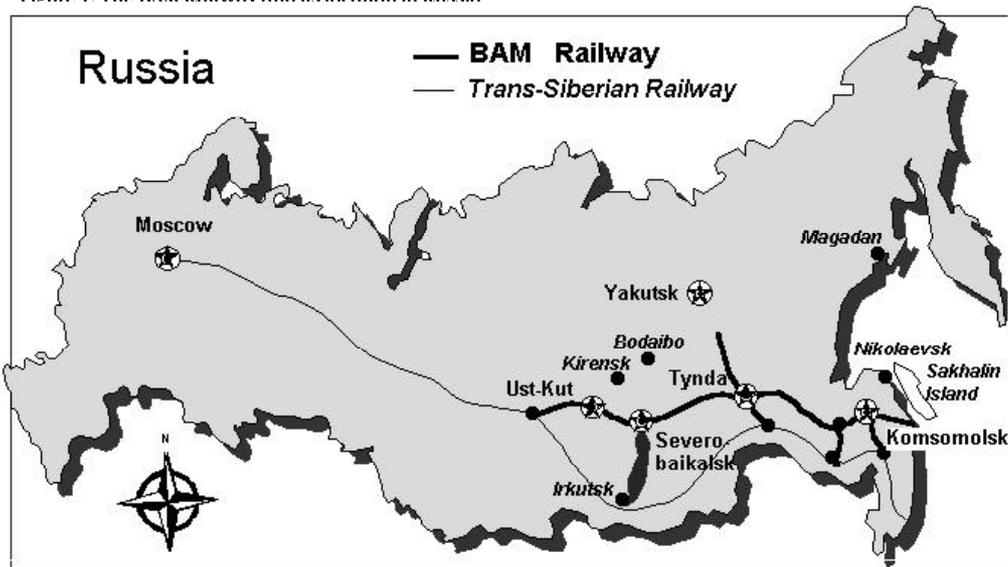
The research project resulted in the book, the Siberian BAM Railway guide². While it could be categorised as a guidebook, in reality the book is a regional, historical and cultural study of a 3,084km long railway development zone in eastern Siberia. This is illustrated by the type of readers the book attracts. The vast majority of the book's readers are students of Russia rather than actual travellers. In fact, as less than 90 Westerners travel on the railway each year, travellers do not even make up a significant

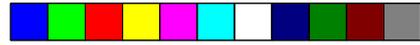
percentage of the book's buyers'. The book's authority is illustrated by the fact that it formed the basis for the entry on the BAM (Baikal-Amur Mainline) Railway in the Modern encyclopedia of Russian, Soviet & Eurasian history (supplement)³ and a US company, which produces business, political and social databases on Russia, have proposed making the guide into an electronic encyclopedia on the region.

The BAM traverses eastern Siberia and runs roughly parallel with, and north of, the Trans-Siberian railway. The BAM provides Russia with a second railway link to the Pacific Ocean. The backbone of the BAM is the 3,084km railway line starting near the Lena River port of Ust-Kut in the west and ending near Komsomolsk-na-Amure in the east. The BAM includes three branch lines: AYAM (Tynda - Berkakit - Aldan and eventually Yakutsk), Little BAM (Tynda - Bamovskaya) and Urgal - Izvestkovaya.

The construction of the BAM was one of the great 20th century construction feats as it traverses 11 large rivers, seven mountain ranges and more than 1,000km of permafrost. It has eight tunnels, 142 bridges more than 100m long and more than 200 stations and passing loops. Construction of the railway

Figure 1: The BAM Railway and its location in Russia





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started in the 1930s using prison labour from Stalin's gulags, but was discontinued when the camp doors opened following the dictator's death in 1953. Work resumed under Brezhnev in 1974 and the railway was officially opened in 1984. However, it was another six years before the railway was upgraded to a standard which allowed regular services to run along its entire length. Even today, the BAM is not complete as one tunnel still has to be finished.

The senior author became interested in the BAM in the late 1980s after reading conflicting reports about the existence of the railway and seeing in atlases that the BAM followed several different routes. It was known that the Soviets were good at disinformation but how was it possible in the 1980s that there was no consensus on the existence and route of a 3,000km railway? This question led to researching the BAM.

Discovery

The first step in answering the question of the existence and route of the BAM was to examine general publications. At one end of the spectrum was the claim that the railway was completed in the 1940s, 40 years before it actually was. An example of this was the article in *The New York Times* on 11 August 1950.

The mistaken belief that the line was completed can be seen in maps of that era. One

such map is found in *Forced labor in Soviet Russia*⁵ (1947).

The New York Times

August 11, 1950

Soviet Completes Far East Rail Link

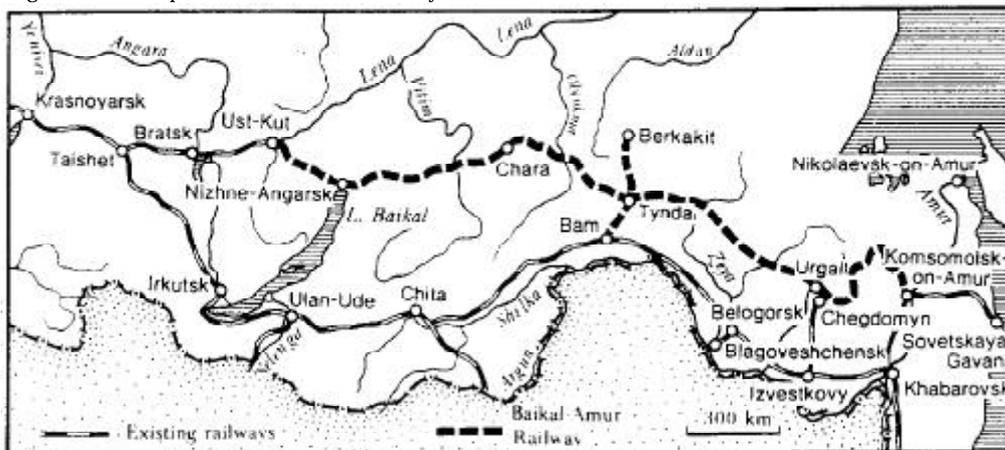
Soviet Russia has completed another strategic railroad to the Soviet Far East, paralleling the route of the double-tracked Trans-Siberian Railroad, Prof. Andre Karpinsky, exiled Russian geologist, reported here yesterday.

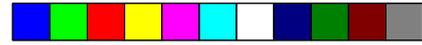
Professor Karpinsky said that the Baikal-Sovietskaya Gavan Railroad had been completed before he left Russia in 1943 and that students of his had made the geological surveys of the road.

Later books acknowledged that the BAM was not complete but drew proposed routes which were incorrect. For example, in *An atlas of Soviet affairs*⁶ (1965), the dashed lined shows a 'tentatively proposed' line running north from Tynda to Yakutsk and then east to Magadan on the coast. In reality, the Tynda-Yakutsk-Magadan route was never a serious contender. To compound the error, the map does not show the Tynda-Komsomolsk route which became the future route.

It is interesting to note that both the map in *Forced labor in the Soviet Union* and *An atlas of Soviet affairs* showed the western end of the line passing through the gold mining

Figure 2: A close up of the 3,084km BAM Railway route⁴.





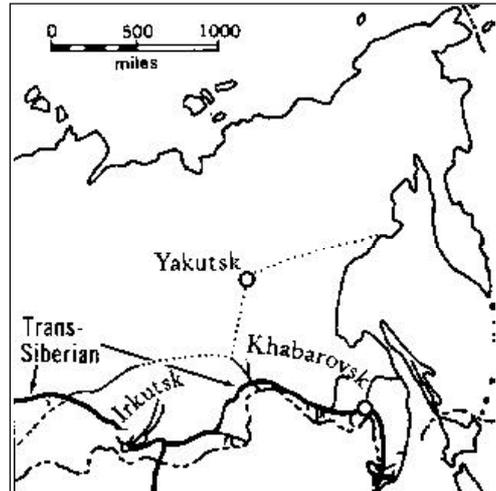
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centre of Bodaibo, which is over 300km to the north of the line's actual route. This significant error was often repeated. For example, in The first guidebook to prisons and concentration camps of the Soviet Union (1980) it states that Bodaibo is 'accessible by train from Taishet'⁷.

The most recent repetition of this erroneous information appears in the 1989 Trans-Siberian rail guide⁸. This showed that the BAM will pass through Bodaibo. It also illustrated that the BAM had already been built to Kirensk which was a significant error as the railway neither had been built to that town nor ever would be. These two errors indicate that either the travel writer was confused or never travelled on the line personally.

Other recent maps have been more accurate, such as the USSR: a travel survival kit (1991)⁹, which correctly showed the basic BAM route but also contained two significant errors. Firstly the map showed the BAM as only partially complete at a time when it had been finished for six years (with the exception of three tunnels) and secondly, it omitted the

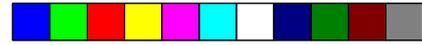
Figure 4: A map from An atlas of Soviet affairs which incorrectly shows the proposed route of the BAM.



three north-south lines which connect the BAM with the Trans-Siberian. At the other end of the spectrum of claims about the existence of the BAM were maps which completely

Figure 3: A map from Forced labor in Soviet Russia which incorrectly shows the BAM was completed.





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omitted the BAM, such as *The new jacaranda atlas* (1989)¹⁰.

Once it became obvious that most general English language publications were inadequate or contradictory, the authors started searching for high quality, primary source material. It soon became apparent that there was a very limited range of English language translations of primary sources. The only useful ones which had occasional articles on the BAM were the *Current Digest of Soviet Press* and *Soviet Geology*.

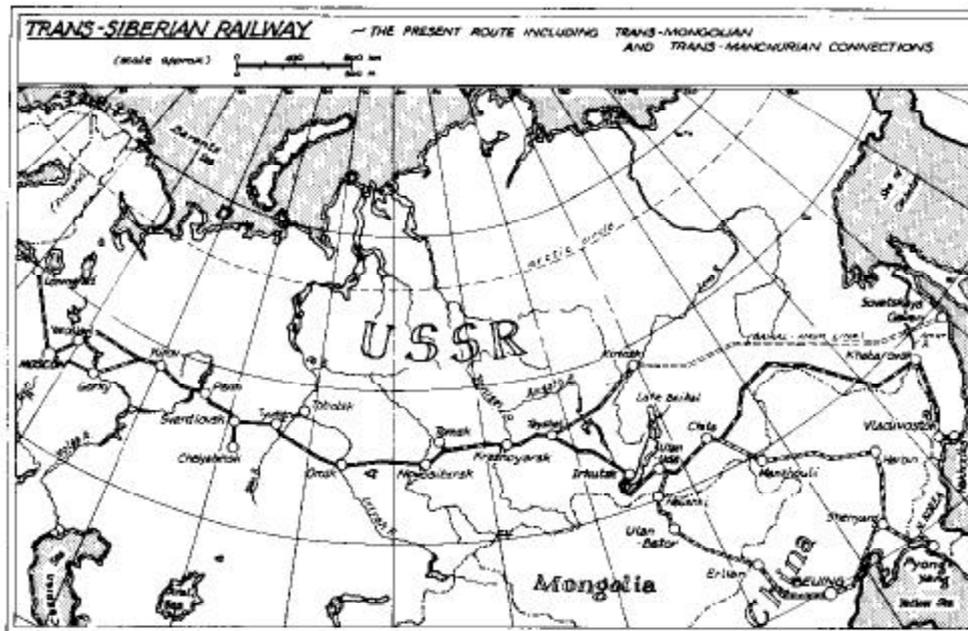
A search of English language academic writing on the BAM identified only one subject matter expert on the BAM; the academic Victor Mote^{vi}. Victor Mote's analyses, which regularly appeared in *Soviet Geology* revealed a long-term interest in the region. Without his work, collecting background information on the BAM would have been extremely difficult. This led to what, for the purposes of this paper, is called OSI Observation 1 which is that subject matter experts probably exist on all subjects and they are essential in providing a

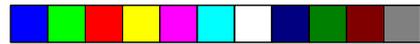
reliable base of information on which to build analysis.

A search of Russian language material on the BAM revealed that it was extensively covered in many books and periodicals. Books devoted to the BAM including *Magistral Veka*¹¹ (*The Great Baikal Railway*) (1977) and *BAM Prodolzhaetsya*¹² (*The BAM Continues*) (1990). Periodicals with regular articles on the BAM included *Gudok* (*The Whistle*), *Izvestiya* (*News*), *Stroitel'naya Gazeta* (*Construction Journal*), *Zheleznodorozhny Transport* (*Railway Transport*), *Ekonomicheskaya Gazeta* (*Economic Journal*), *Voprosy Ekonomiki* (*Questions of Economics*), *Ekonomicheskaya Geografiya SSSR* (*Economic Geography of the USSR*) and *Narodnoye Khozyaystvo* (*National Economy*).

The route of the BAM could be found in many Soviet publications from the mid 1970s onwards. For example, the 1977 edition of the *Bolshaya Sovetskaya Entsiklopediya* (*Large Soviet Encyclopedia*) shows the detailed route.

Figure 5: A 1989 map from the *Trans-Siberian rail guide* which contains two significant errors. Firstly, the 'completed' line to Kirensk never existed and secondly, it shows that the proposed BAM line passes near Bodaibo, which is 300km to the north of the line's actual route.





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This discovery led to OSI Observation 2 which is that specialised primary information on a remote and closed area of the Soviet Union did exist, but the vast majority of it is not in English.

During the early 1990s, on-line sources in Russian were of no use as none of the primary sources were in electronic format. By 1998, there are several relevant on-line Russian language sources. However, compared to printed material, they do not represent a significant source of historical or current information on the BAM. This finding led to OSI Observation 3 which is that highly specialised on-line sources in Russian were very limited and are still not significant today.

Considering the plethora of accurate Russian language primary material, there was no excuse for English language books to publish inaccurate information on the BAM by the 1980s. The very fact that they did suggests that the authors never undertook serious research, but instead just reprinted inaccurate material from other English language authors. This led to OSI Observation 4 which is that errors are often repeated in open source information on Russia as the foreign language discourages writers to use primary sources to verify previously printed English language reports.

Discrimination

Discriminating between various sources of information was vital, particularly considering

that it was known that some of the English language material was inaccurate. Sometimes it was easy to identify material which had a high probability of being inaccurate and therefore should be discarded. For example, the following quote contains the unusually frank admission that the source of the information was a second-hand rumour, and warns readers of the source unreliability.

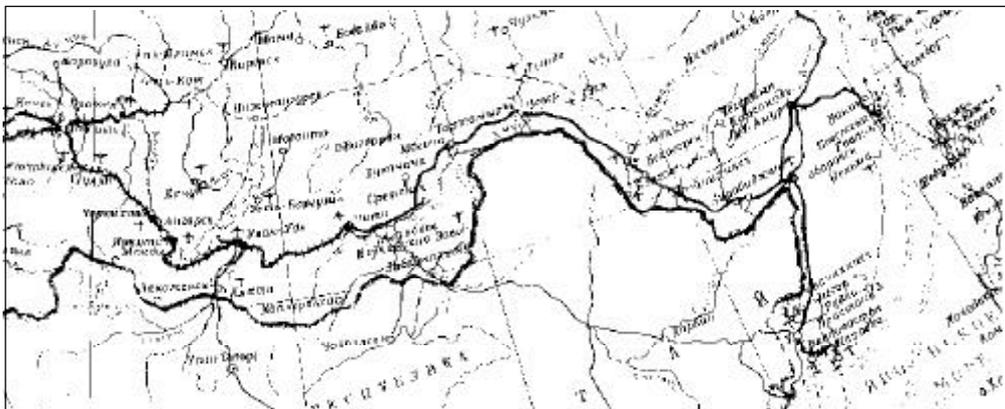
'An American traveller in Siberia brought back the story in 1941 of the building of another railway line in the Soviet Far East. He did not see it himself, only heard about it from a young Communist. This line was to have its southern terminus at Komsomolsk and from there run along the Okhotsk Sea, eventually reaching Kamchatka peninsula and the Bering Sea.'¹³

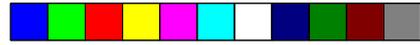
Incidentally, discarding this information has been justified as the authors have not discovered any serious Soviet-era plans for this route.

Several techniques to discriminate between good and bad sources, current and outdated sources, and relevant and irrelevant sources were used. Firstly, if the source of the material was given, the material was worth further consideration. Source attribution made it possible to drill down to the original source so that it could be evaluated.

Comparing the quoted material with the original material revealed that quoting authors

Figure 6: A map which appeared in the Bolshaya Sovetskaya Entsiklopediya (1977) correctly showing the proposed BAM Railway route.





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occasionally took considerable poetic licence. An example of this was an article on the BAM published in Moscow Times on 18 July 1998. It stated that:

'The BAM zone began attracting investors in the mid-1800s when explorers considered and then gave up construction, concluding that it was too complicated and expensive. Then a French entrepreneur, Loik de Lobel, representing US rail companies, proposed to finance the construction of a Siberian-Alaskan railway in exchange for a 90-year-lease of all land within 25 kilometers of the line, according to Yates.'

It would appear from this quote that the person being referred to (i.e. the senior author) considers that there was a link between the BAM Zone and the proposal by Loik de Lobel. However, this was not the case as the journalist took some licence with the statements on which her quote is based. Her quote was based on page nine of the Siberian BAM Railway guide. The statements were discussing the history of railways in Siberia and were not referring to the BAM Zone directly. The statements were:

'One of the most famous development proposals [for a Siberian Railway] was from a French entrepreneur, Loik de Lobel, acting on behalf of US rail companies in 1904. He proposed a Siberian-Alaskan railway starting near north Baikal, through Yakutsk and then across the Bering Straits to Alaska. The construction would be privately funded on the condition that the bankers had a 90 year lease on all land within 25 km of the railway.'

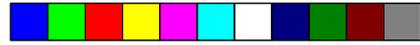
Had Loik de Lobel's proposed railway gone ahead, it would not have passed well to the north of the BAM Zone. This led to OSI Observation 5 which is that it is necessary to check the original source before accepting quoted material.

Secondly, sources needed to be weighed against one another with more reliability attributed to newer and specialist publications and less to older and generalist publications. This reflects the fact that until the 1960s, most information on the region

came from former gulag prisoners and prisoners of wars. Reports from these people did not provide sufficient information to build a region-wide view of BAM developments. After the 1960s, spy satellites could provide accurate information but this appears to have not been released to researchers as illustrated by the incorrect maps in publications such as *An atlas of Soviet affairs*¹⁴. By the late 1970s, the information on the BAM was very reliable as films, articles and first hand observations were readily available.

Thirdly, unsourced material was noted and accepted if it was collaborated by independent material. For example, a book on Soviet prison camps claimed there was a mining gulag camp near Severobaikalsk at Lake Baikal's northern end. Despite the observation that prison camp books normally contained considerable errors, the mining claim was cross referenced against books on the natural resources of Siberia. These stated that mica existed at both the northern and southern ends of Lake Baikal. It was also known that mica was mined in the south. Therefore it was reasonable to believe that a mica mine existed near Severobaikalsk and that its miners were probably gulag inmates. This information was later validated first hand when the author was taken to the remains of Akikan Gulag camp. This point led to OSI Observation 6 which is that unsourced information is useful if it can be independently collaborated.

Analysing seemingly unrelated material is a useful way to make insightful deductions. For example, in 1941 Pravda, reported that chickens were airfreighted from Irkutsk to Bodaibo. At the time, the BAM was thought to go through Bodaibo. This news revealed that the line to Bodaibo was either not completed or was not being completed. This assertion was supported by a report in Pravda on 2 November 1942 which stated that the people of Yakutsk donated presents for the soldiers at the front and these were despatched by train from Irkutsk. This implied that they were flown from Yakutsk, over Bodaibo to Irkutsk. This led to OSI Observation 7 which is that seemingly unrelated information can be useful in deducing and collaborating other information.



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The discovery and discrimination phases are extremely time consuming. As an illustration of the large number of sources examined during the two phases, over 420 publication request slips were lodged with the National Library of Australia alone.

Validation and local discovery

In the early 1990s, Russia relaxed travel restrictions on foreigners which gave the senior author the opportunity to travel to the BAM to validate the research. The research notes were ringbound into 200 A4 pages. The information was organised into rough chapters which were carried over into the final guide. These chapters were:

- the history of the BAM;
- life in the BAM Zone;
- rail operations;
- planning a trip;
- a summary of each village, town and city in the BAM Zone.

On the road, corrections, new information and questions were added to the notes. As can be imagined, the senior author was paranoid about losing this much-scribbled book. Three times this nearly occurred. The first time was when the author was interviewed by the KGB in the engine cab of a locomotive. This followed an attempt to take photographs from the cab as the train crossed over a bridge. The military guard on the bridge saw this breach of law and contacted security at the next station at which the train was to stop. The second incident was when the author's photographer was taking photographs of Khabarovsk station and was approached by a heavily armed station guard with an attack dog. The third incident was when a policeman saw an accurate hand drawn map of Taksim township in the ringbound book and thought it was a 'state secret'. A combination of pleading and showing an impressively stamped letter of support from Moscow diffused each situation.

Validating physical data was relatively easy as the reported spur line, monument or hotel was either there or not. However when it came to validating history or non-observable things, it was considerably more difficult as it relied mostly on people's opinions and

on people providing leads for collaborating evidence.

From the experience of questioning locals, the can be grouped into four types. The first type were those who repeated and embellished second-hand information without actually knowing the facts. For example, one local stated that to get to the Marble Canyon uranium mining gulag camp from Novaya Chara station would take about one day. In reality the round trip takes eight solid days of trekking, including crossing a marsh, a glacier and several rivers.

The second type were people who knew but either pretended not to know or refused to say. There were several reasons for this. These included protecting information which could put the country in a bad light (this means great slabs of history are ignored), regurgitating the Party approved line (despite the fact that the there was now no Party) and self interest. An example of a person who refused to state the facts was the guide to the BAM Museum in Novy Urgal. When asked to talk about prisoners who built the Dusse-Alinski tunnel in the 1940s and 1950s, she stated that only soldiers built the tunnel and it was only built in the 1970s. However, this was not the truth. The tunnel was actually completed by gulag prisoners in 1950 but became blocked after it was abandoned in 1959 when it became obvious that the railway line to the tunnel was not going to be built. The soldiers stayed in the former gulag camp buildings and found frozen corpses and other remains of the former tunnellers. Soldiers started sending the gruesome findings home and the most famous of these was a skull turned into a candlestick holder. This scandal was reported in the Soviet press in the mid 1970s and resulted in a military commission investigating the situation. This commission resulted in the destruction of all gulag-era evidence and the burying of the story. So despite the well reported story, the guide still perpetuated the Soviet-era version of history.

The third type were people who knew surprisingly little about their immediate region. There were several reasons for this including a societal bias against historical curiosity, extremely high labour turnover, lim-



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ited ability to travel, and obsessive secrecy. An example of this was the refusal by Russian authorities to release a strategic management plan for the Lake Baikal region which was developed during the 1990 Expertise Conference held in Severobaikalsk. Conference participants included UNESCO, the Californian Earth Institute, Soviet agencies and local representatives. In this particular case, locals got around the problem by obtaining an English language copy of the report, which was freely available in the US, translating it and getting it published in the local Severobaikalsk newspaper.

The fourth type were people who had first hand knowledge. For example, one local drew a map of the very small, isolated town of Taksimovsk which would have been next to impossible to obtain without her help.

As it is very difficult to determine which type a person is when they are providing (or not providing) information, the only way to guarantee information accuracy is to confirm it first hand. This is OSI Observation 8.

Other local sources of information included museums, archives, photograph albums, libraries and local newspapers. However there were significant limitations on the usefulness of these sources. Despite the years of glasnost, most museums had only Soviet-era propaganda with a little information about the political repression of Stalin. Access to archives was very difficult, most of all because there was none in the BAM Zone itself. For example, the Komsomolsk-na-Amure archives were held in Magadan which is over 1,400km to the north of Komsomolsk-na-Amure. Photograph albums of natural and man-made wonders were useful on the railways and the region. Pictures of monuments led to interesting historical sites, aerial photographs of towns allowed street maps to be drawn and illustrations of permafrost protection led to the discovery of fascinating engineering techniques.

Library books were of limited use as all libraries had the same homogenous Soviet-era holdings. However libraries did have two useful sources of information. Firstly, some libraries held specialised maps, such as fishing or hiking maps. A few finds were very lucky,

such as a topographical map of the Kodar Mountain Range¹⁵ designed for serious alpinists, hikers and cross country skiers. It covered the area of the abandoned Marble Canyon uranium mine gulag camp and although it was not referred to directly, the gulag's site was marked on the map as 'Geologists' settlement (abandoned)'. Secondly, libraries held limited circulation local newspapers. These newspapers, often as small as a one tabloid page and produced only once a month, were published in Severobaikalsk, Taksimovsk, Chara, Tynda and Novy Urgal, Vanino/Sovetskaya Gavan and Komsomolsk-na-Amure. In addition, there was one local railway newspaper, not surprisingly called BAM. None of these publications were held in public libraries outside Russia at that time, according to the Australian Bibliographic Network. This led to OSI Observation 9 which is that much of the specialised primary source material of Russia is not available outside that country. As the BAM Zone libraries did not have photocopiers, researching was very time consuming.

One of the greatest finds during the local research phase was a secret Soviet report¹⁶ written in 1945. There were 200 numbered copies printed of the book and it showed the exact route of the BAM. The route in the report was virtually identical to today's route. There were two main implications of this report. Firstly, as the route did not go northwards to Bodaibo, Western reports of the Bodaibo route (up until 1989) were not based on reliable Soviet sources. This meant that they were either guesswork or based on Soviet disinformation. Seeing that it was impossible to hide a railway with the advent of spy satellites in the 1960s and that the railway was built to Severobaikalsk (which was the southern route) in about 1981, the errors could not have been due to Soviet disinformation. Therefore the route error was due to sloppy research.

The second implication was confirmation of Soviet press reports about the failure to undertake proper research before digging a 15.7km tunnel through the North Muya Mountain Range. The 1945 map showed the tunnel at the same site at which work started three decades later. Considering the advances in geology over 30 years, it is surprising that this



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was still the optimal route. This observation supported the 1980's claim made in the Soviet press that the decision to build the North Muya tunnel was fundamentally wrong. According to Vladimir Ignatovich, chief geologist for the Buryat Geological Production Association (Buryatgeologia) which surveyed the original BAM line:

'Back when the route was being surveyed, we warned the designers at Novosibirsk's Siberian State Transport Design Institute and the Leningrad State Subway Design Institute about the highly complex conditions in the BAM's Buryatiya sector. We felt it would be better to bypass it from the south with minimal excavation work. However the shortest part was chosen, a 15km tunnel.'

Therefore, it would appear that the site for the tunnel was not based on surveys of the 1960s and 1970s but rather on the 1945 master plan.

The North Muya Mountain Range tunnel is also an example of local research neither validating nor disproving a BAM story frequently published in the West. The story is based on an accident in September 1979 when a drilling team hit an unexpected fault line which held 12,000 cubic metres of water, sand and rocks. The water surged into the drilling gallery in just a matter of seconds, drowning a number of miners. Details of the disaster were published in Pravda on 28 February 1983 but the report contained no mention of deaths. A much quoted report put the toll of dead and injured at several hundred¹⁷. The author made several different attempts to find the true figure but these were unsuccessful. Firstly, the co-author, a former tunneller who worked elsewhere on the BAM at the time, contacted his former colleagues but none knew the death toll. Secondly, contact was made with one of the railway construction managers of the tunnel at the time but he refused to put a figure on it. Thirdly, a search for memorials to the tunnellers was fruitless.

Local research also revealed several local stories which were not (unsurprisingly) mentioned in Western publications. These included a UFO club at Seti and Yeti sightings in Vanino. However the most significant local

discovery, which was not mentioned in any literature during the discovery phase, was a planned 400km northern extension and a 7km undersea tunnel to Sakhalin Island. In Komsomolsk-na-Amure, the historian Marina Kuzminovna, told the author about a 1950 secret order by the Council of Ministers to build a 400km railway from near Komsomolsk-na-Amure to the Cape Lazarev on the Tatar Straits. The only other information she provided was that 122km of the line was laid before Stalin died and the project was abandoned. In Nikolaevsk-na-Amure, the author met the local museum head who had started visiting and collecting information about the gulag complex in Cape Lazarev in the early 1990s. He had seen the remains of the gulag camp and a vertical tunnel shaft which was the only tunnel works done before the project was abandoned. As an illustration of how compartmentalised information was in Russia, at the same time the author was travelling, an article appeared in the Russian railwayman's newspaper Gudok asking readers if they had any information on the alleged Tatar Strait tunnel. This lack of knowledge is quite surprising considering that the newspaper is 90 years old and has the support of the two million strong State railways behind it.

One of the hardest aspects of developing a guidebook is to produce town maps. Soviet maps are intentionally inaccurate, a fact which dates back to a decision in the 1930s when the government decided that accurate maps could be used by an invading enemy. This decision still stood, despite the advent of spy satellites, until 1989 when the Main Administration for Geography and Cartography (GUGK) produced the first accurate map of Moscow in over five decades. To produce maps of villages, towns and cities, a number of approaches were used. Locals were asked to draw maps of their village, blueprints of a city were obtained via connections with the son of the city's mayor, and aerial maps of cities from photograph albums were manipulated. Only once did the author resort to using a compass and pacing but it soon became obvious from the stares of the onlookers that this could lead to being arrested for spying. It must be remembered that taking photographs of bridges, railway installations



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and other 'sensitive' installations was and is still forbidden in Russia.

The one category of information collected in the West which was completely wrong was information on services for travellers. Just prior to the research starting for the second edition of the guidebook in 1998, the update author was advised by numerous people that the vast majority of services for travellers, such as hotel accommodation, ferries and restaurants, were no longer available. Local research showed that the services were still available, although some of them were sporadic. There were several reasons for the inaccurate information. Firstly, the people providing the advice did not have first hand information. Secondly, communication in the BAM Zone is quite difficult, as there are two different telephone systems among other reasons, and if no answer was received, it was assumed that the service was no longer available. Thirdly, reliable information on services is only available from the location which organises the service. For example, ferry timetables can only be trusted at the point of the ferry's departure as information at the destination and points along the way may be old, invented or completely unavailable.

The net result of the validation phase was that about 30% of secondary source and about 90% of primary source information turned out to be accurate. In addition, the book grew by about 20% as a result of new information discovered while in Siberia.

Conclusion

As a case study of OSI, the researching and writing of the Siberian BAM Railway guide is an interesting example. The research was done in an era when on the ground researching was not possible but by the time it was finished, the area was opened and the collected data could be verified.

With hindsight and a lot of money, it would have been possible to produce nearly all of the book without visiting the region. This would have been done by purchasing satellite imagery, interviewing foreign technical experts who supplied mining goods to the region, and analysing Russian publications. However on the ground research would have

been needed to complete the maps, obtain information on services for travellers, and gain access to locally produced newspapers where not held in the West.

The lessons learned from an OSI perspective in this project include that:

- subject matter experts probably exist on all subjects and they are essential in providing a reliable base of information on which to build analysis;
- specialised primary information on a remote and closed area of the Soviet Union did exist but the vast majority of it is not in English;
- highly specialised on-line sources in Russian were very limited and are still not significant today;
- errors are often repeated in open source information on Russia as the foreign language discourages writers to use primary sources to verify previously printed English language reports;
- always check the original source before accepting quoted material;
- unsourced information is useful if it can be independently collaborated;
- seemingly unrelated information can be useful in deducing and collaborating other information;
- it is necessary to obtain first hand confirmation of verbal information supplied by locals; and
- much of the specialised primary source material of Russia is not available outside that country.

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Notes

ⁱ Athol Yates, BEng, GradDip Soviet Studies, is the author and Nicholas Zvegintzov is the update editor of the Siberian BAM Railway guide: the second Trans-Siberian Railway. 2nd ed. (London: Trailblazer Publications, 1999.) Athol Yates is a

^v Policy Analyst, Institution of Engineers, Australia and Nicholas Zvegintzov is the President of Software Maintenance News Inc. (USA).

ⁱⁱ An example of this is the Optimising Open Source Information Conference held on 7-8 October 1998, Canberra, Australia which included papers on OSI and OSINT by intelligence professionals including Major General Bill Crews, Director of the Defence Intelligence Organisation (DIO), Jason Brown, Australian Security Intelligence Organisations (ASIO), and Dr V. Lakshmi Narasimhan, Defence Science and Technology Organisation (DSTO).

ⁱⁱⁱ Governments in particular are re-evaluating this traditional approach to intelligence as it results in the production of classified data which is often very expensive, available on only a narrow range of topics, is out of data by the time it is read by the end-user, and its reliability cannot be assessed easily by the end-user as its sources are withheld.

^{iv} Robert Steele and Mark Lowenthal founded the OSS Inc. and OSS Academy in 1992 and state, somewhat self-servingly, this was the year when the 'OSINT Revolution Begins'. Robert Steele probably has the highest world-wide profile for promoting OSI. He does acknowledge that OSI is not new as legal travellers gathered intelligence even before the Roman Empire, however it has been neglected since the Second World War.

^v During the first nine months of 1998, only 40 Western tourists had stayed in Severobaikalsk (the most popular city for tourists on the BAM) for more than one day. Personal correspondence with Rashit Yahin, head of BAMS Tours, Severobaikalsk's only tourist company, 28 September 1998.

^{vi} Victor Mote, University of Houston, wrote the first detailed book on the BAM. The book, Gateway to Siberian resources (The BAM). (Scripta Publishing Co.) was written with Theodore Shabad and published in 1977. It is interesting to note that he only travelled once on the BAM. That was in March and April 1985, when he rode the BAM for 52 km from Ulkan to Kunerma. During this time he was accompanied by representatives of Novosti Press and the KGB. Despite this lack of on-the-ground experience, his connections with Soviet experts and other sources gave him reliable insights. Since 1991, he has worked on a broader Siberian-Russian Far East area. He has also written An industrial atlas of the Soviet successor states. (Industrial Information Resources, 1994) and Siberia: worlds apart. (Westview, 1998).



Survival strategies in the Learning Age – hybrid staff and hybrid libraries

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Abstract In the Origin of Species, Charles Darwin sets out his observations on the evolution of species, and survival through adaptation to changing environments. Darwin's theories are applied to the current learning environment, which has undergone radical changes. It is argued that academic libraries and library staff need to adapt swiftly to the new learning environment, now that education is high on the political agenda. Institutions of higher education face stiff competition from a range of non-traditional education providers, and information professionals also risk being usurped by other professions eager to become involved with the Internet. The hybrid information professional and the hybrid library are evaluated as survival strategies for the new learning environment. The history of the hybrid professional is traced through the literature, and initial findings from the hybrid library projects (Phase 3 of the Electronic Library Programme (eLib)) are evaluated.

Introduction

'The process of hybridization is important biologically because it increases the genetic variety (number of different gene combinations) within a species, which is necessary for evolution to occur. If climatic or habital conditions change, individuals with certain combinations may be eliminated, but others with different combinations will survive. In this way, the appearance or behaviour of a species gradually may be altered. Such natural hybridization which is widespread among certain species makes the identification and enumeration of species very difficult.'¹

If Charles Darwin could board the Tardis or the Starship Enterprise, and travel or warp from mid-Victorian industrialised Britain to the digitised virtual world of the Information Age, he might be amused to observe how his ideas, articulated in Origin of Species by Means of Natural Selection², are being applied to a domain far removed from the biological sphere – the libraries of academe. The notion of the 'hybrid' library professional was once ruled out as a viable possibility, but is gradually gaining in acceptance as managers of academic libraries realise the networked information environment is here to stay, and a new breed of information professional is needed to sup-

port it. The hybrid library, as a model for current and future service delivery, is also under investigation and development under Phase 3 of the Electronic Library (eLib) Programme³.

It could be argued that the term hybrid is widely used in a variety of contexts, remote from natural evolution and Darwinian ideology. 'Hybrid' simply signifies that which is a mixture of other things – usually two other things. When used by the Library and Information Services (LIS) community it therefore reflects an ability to operate in both the electronic and the print environment. Or does it? On one level it certainly does, but if we examine the national and global environment in which the modern academic library functions, we find an environment which has been evolving for some time, and which is likely to change even more dramatically in the future. The hybrid library and the hybrid information professional could be interpreted as survival strategies in response to a changing environment.

The political and cultural environment in which higher education now operates is a much changed one. It is articulated through sound bites and slogans: 'Information Superhighway'; 'The Learning Age'; 'University for Industry' and 'Education, Education, Education'. The trend away from ivory towered centres of excellence for an elite