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Risk, trust and reputation in the Norwegian offshore supply chain

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ABSTRACT

Offshore cargo delivery operations are risky endeavours, particularly during bad weather and when vessels rest in dynamic positioning (DP) mode alongside installations. These operations involve intense interactions among crew on Platform Supply Vessels (PSVs) and installations, and the risk involved is closely related to how these operators relate to each other. Based on ethnographic fieldwork this article presents findings showing that there are times when installations put pressure on PSVs to carry out delivery operations under sub-optimal safety conditions. PSV crews fear that the installations will give them a bad reputation as incompetent, lazy and defiant if they do not comply. When they do not trust that installations appreciate their risk assessments PSV crews find themselves in a conflict between compromising on material safety in order to maintain the reputation they need to secure future contracts, or behaving in optimally safe ways.

1. Introduction[1]

Approximately 100 oil and gas installations are presently operating at the Norwegian Continental Shelf (NCS). All of them receive a steady supply of cargo delivered by Platform Supply Vessels (PSV) running shuttle between land depots and installations. Due to recent dramatic fluctuations in oil prices and the Covid-19 epidemic it is difficult to provide an exact figure of how many PSVs are involved, but as of medio 2019 a total of 70[2] vessels were regularly employed at the NCS. Delivering this cargo is a high-risk endeavour (Ptil 2008; Ptil 2011) particularly during the phase when PSVs approach and rest alongside installations in Dynamic Position (DP)[3] mode and cargo is moved between them (Kongsvik, Bye, Fenstad, Gjøsund, Haavik, Olsen and Størkersen 2012, Sing Sii, Wang & Ruxton 2003).

Both Kongsvik et al. (2012) and Sing Sii et al (2003) provide comprehensive overviews of the risks involved in such delivery operations. Loss of position incidents that lead to collisions between PSVs and installations is the most severe risk as they may lead to large scale disasters. The worst historical example is the Mumbai High North explosion in the Indian Ocean in July 2005 when a collision caused a gas leak and a fire that killed 22 people. So far, no such disasters have happened in Norwegian waters, but 122 collisions were reported between 1982 and 2015, six of which had the potential to lead to large scale disasters (Ptil 2011 and Ptil undated).

Loss of position incidents that do not lead to collisions have lesser potential for damage, but happen more frequently. Sixteen reports of such incidents, on fourteen different vessels, were reported in only four years, between 2014 and 2018. (Kvitrud 2019). None of the loss of position incidents offshore Norway have so far resulted in deaths or injuries, but significant material damage and economical costs have incurred. As recently as 7 June 2019 a production platform had to be evacuated following a collision that damaged lifeboats (Equinor 2019).

Handling cargo is the third risk category. This risk is lower than for loss of position incidents as the chance of a large-scale disaster is minimal. The potential damage still severe, however, in the sense that human lives have been lost, and the frequency of such accidents is high. The North Sea Offshore Authorities Forum has reports that lifting and mechanical handling accounts for almost 50 % of all fatal offshore

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[1] An early version of this paper was presented at the Ergoship Conference in Haugesund on 24–25 September 2019. That version is published in the proceedings from the conference (https://www.hvl.no/contentassets/9d0c2d7885534c1fb21d17d7c474a828/ergoship_2019_proceedings.pdf).

[2] The number fluctuates all the time and official records are not freely available. These figures have been provided by the ship broker firm Clarkson Plato AS in April 2019.

[3] "Dynamic Positioning (DP) is a vessel capability provided via an integration of a variety of individual systems and functions. A computer control system automatically maintains a vessel's position and heading by using her own propellers and thrusters. Position reference sensors, combined with wind sensors, motion sensors and gyro compasses, provide information to the computer pertaining to the vessel's position and the magnitude and direction of environmental forces affecting its position." (The Nautical Institute, 2021) (https://www.nautinst.org/resource-library/technical-library/dynamic-positioning.html).

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fatalities (Ptil 2008). This figure includes accidents within installations as well as those that happen on PSVs and during lifting, but still indicate the risk involved in handling cargo.

Cargo delivery operations have attracted a lot of attention from researchers seeking to identify and understand how unwanted events happen, and how to avoid them. (See e.g.; Antonsen 2009, Antonsen and Bye 2014; Bottema, Grol, Ladeur and Post 2015; Hassel, Utne and Vinnem 2014; Kongsvik et al. 2012, Kvitrud 2011, Kvitrud, Kleppestø and Skilbrei 2012, Kvitrud 2019, Pawelski 2015, Sing Sii et al. 2003, Tvedt 2014, Sætrevik, Ghanonisaber, & Lunde 2018). The research presented in this article builds on some of this previous research, particularly a large-scale interdisciplinary project carried out by Studio Apertura NTNU Social Research between 2001 and 2010 (see e.g. Solem, Kongsvik and Anderssen (no date), Kongsvik et al. (2012). That project was initiated to "diagnose" and "treat" a dramatic increase in collisions (from 2 in 1997 to 12 in 2000) and delivered a wide range of technical, crewing and organisational improvements that contributed to bringing the number of incidents back down to 1997 levels.

The Studio Apertura research builds on the core assumptions that safety is often a matter of cooperation and therefore it is *"important to focus on what goes on between groups of actors"* (Solem et al. (no date), p 8, author's translation). The research found that low levels of trust between actors was a major underlying contributor to the accidents and a number of successful changes were introduced to improve the trust. Interestingly enough, however, the research stopped after having identified *that* low levels of trust was a problem and did not proceed to try and find out *why* and *how* the trust was low in the first place as well as the details of *how* the low trust decreased safety.

A more recent study by Sætrevik et al. (2018) also investigates relationships between PSV and offshore installations. This study confirms the findings by Studio Aperture (but without referring to it). Sætrevik et al. argue that the power balance between PSVs and installations are unequal, that PSVs are subservient and that there is often low degrees of trust between them. They also found that installations may put pressure on PSVs to keep operating in spite of PSVs having decided that it may compromise safety, and that installations may use *"reward power (the chartering company may be reluctant to renew contracts with vessels that are seen as unreliable)"* (page number not provided in online version) if a PSV fails to obey. All these observations and arguments are of importance for the present article and are therefore mentioned here at the outset.

This article continues where the Studio Apertura research left off, but due to limitations on space it is impossible to deal with all three questions at the same time. This paper therefore concentrates on explaining how the low trust in these relationships contributes to decreased material safety in cargo delivery operations. It is based on ethnographic fieldworks on offshore vessels, primarily PSVs offshore Norway, but also in Malaysia, Australia and in the UK sector. On the basis of this material it focuses on relational and organisational factors such as cooperation, respect and disrespect, the kinds and levels of trust between operators, how operators think about the others and how all of this influences the high-risk decisions that operators make as operations unfold. It primarily explores how the seafarers construct images and ideas about crews on installations, how they assess the trust in these relationships, and how this influences the risk of cargo supply operations. One of the important findings during the fieldworks is that PSV crews frequently find themselves in situations where they experience a conflict between operating safely and complying with the wishes and demands of installations. As PSV crews never know who the individuals are that they deal with, PSV crews have no historical basis for assessing their trustworthiness and whether they will respect the safety decisions that the PSV crews make. Thus, they never know if individuals at installations will slander them and give them a bad reputation as incompetent, lazy and defiant if they maintain optimal safety. In order to maintain their reputation as highly competent and service oriented, crews find themselves in a conflict between behaving in optimally safe ways or compromising on material safety in order to maintain the reputation they need in order to secure future contracts.

While working on this empirical topic it became clear that the existing theories about trust, and the relationship between trust and safety, were not adequate for understanding the empirical data at hand. Consequently, a major theoretical revision of this concept was needed, and a series of new theoretical perspectives have been developed. The research thus has both a theoretical and an empirical aim. The theoretical aim is to present these new theoretical perspectives on trust and its relation to safety, and to argue for their usefulness. The empirical aim is to describe and understand the phenomena that PSV crews sometimes behave against their own judgement of what is optimal safety. In other words, to establish that the phenomenon described is real and a result of how PSV crews handle fraught decision-making situations characterised by conflicts of interests between PSV and installations, complicated trust challenges and the need to balance the material risks of accidents against social risks of a bad reputation as incompetent, lazy and defiant.

Due to restrictions on space the empirical topic about the kinds of reputations that are at stake, how they are acquired and lost, is not explored. This topic is far too rich to be included here, and will be dealt with elsewhere.

The structure of the article is as follows: In chapter 2, "Background", the article presents the empirical context as well as existing empirical research about it. Chapter 3 contains a presentation and some reflections on the the method used for gathering and analysing data. In chapter 4 the article presents the theoretical position it takes regarding what kind of safety science questions it explores. The fifth chapter present the contributions to theory about trust, and the relationship between trust and safety. In chapter six findings are presented and discussed, and conclusions make up chapter seven.

2. Background

The cargo supply chain, linking offshore oil and gas installations with land depots, could be studied from many different perspectives. The chain consists of several links, all or which can impact on both efficiency and safety. The link between PSV and offshore installation has, by far, received the greater part of attention so far, for the obvious reason that this is where the risk is greater. Geographically such chains can be found in many places around the world, and it is likely that the actual cargo delivery operations, and the relationships that make up the various links, vary somewhat between locations. My own observations from Australia and Malaysia indicates that the relationships between PSVs and installations are of great importance to PSV crews there as well, but that the dynamics of these relationships are quite different to those that were obtained at the NCS. An important difference is that cargo delivery operations at the NCS have received rather much research attention, and hardly any in other geographical locations. Hence this article does not compare findings with other places, as there are no findings to compare with.

The cargo supply chain in the North Sea has been described elsewhere (see. e.g. Pawelski 2015) and a comprehensive description will therefore not be presented here. Platform Supply Vessels and Installations need to be presented, however, so that the rest of the article makes sense.

PSVs that serve installations are purpose made for the jobs they do and are all generally similar. To outsiders PSVs appear more or less indistinguishable; hard to tell apart. Almost all have the same layout with the living quarters and bridge at the fore, and the deck at the back. Most bridges have dual positions so that the vessel can be easily operated in both directions. Most have several propellers; thrusters at the front, often azimuths midship and aft. Individual and important differences still exist, however, and some are crucial. Older vessels usually have less power and fewer thrusters then new ones. Some motors are electrical, others run directly on diesel. Different propeller technologies allow for greater or lesser precision when resting in DP mode. These individual

characteristics determine the boundaries for what kinds of weather conditions a vessel can handle while resting in DP mode alongside an installation. Each individual PSV has its particular advantages and limitations, and just because one PSV is able to handle a particular set of weather conditions does not mean another PSV can handle the same. These important individual characteristics are not noticeable from the outside, however, an important point regarding how PSV crews experience that crews on installations respond to them, a topic I will return to later.

Two different types of PSV crew perform essential cargo delivery tasks: Bridge officers and deck crew. Bridge officers make and execute overall navigational and safety decisions. Deck crew carry out decisions made by bridge officers, but also make and execute decisions about specific tasks like signalling to installations crane operators when to begin the lift. These two categories of PSV crew are the focus of attention in this article. Engine crew are generally not directly involved in cargo delivery and their most important task is to ensure that the technical equipment does not break down causing a "loss of position incident".

Two types of manned installations at the Norwegian Continental Shelf receive cargo from PSVs: Stationary installations that extract oil and gas, and floating platforms involved in exploration. Stationary installations are larger than floaters and require large amounts of cargo to be delivered on every cargo run. These installations exist for many years and are usually served by PSVs on long term contracts. This means that even though the actors involved never meet face to face, they become accustomed to each other. The PSV crews also learn about the peculiarities of these installations, such as wave patterns and currents that affect the handling of the vessel when in DP mode. Floaters are smaller, usually have far less storage space and never stay for long in each position. They therefore need smaller amounts at each delivery, but frequently more urgent deliveries. As these platforms move a lot the PSVs are often hired on the spot market, and the PSV crews do not build up knowledge about the specific risks at each platform.

As part of the Studio Apertura research Kongsvik et al. (2012) analysed the existing safety barriers employed to minimize the risk of unwanted incidents in these cargo supply chains. They concluded that one of the riskier parts of cargo delivery operations is the phase when PSVs rest in DP mode along installations, particularly during bad weather, and argue that tensions in relationships between of PSVs and installations is an important risk factor during this phase. They also found that PSV crews can experience time pressure because installations emphasize efficiency over safety and that installations exert pressure to deliver cargo when the conditions are at (or beyond) the limit of what PSVs consider safe. Transgressions of weather restrictions happen, partly due to time pressure, but also due to assessments that underestimate the severity of the conditions. In total, the researchers found that PSVs frequently do not trust installations and the oil company to a great extent.

Relationships between crew on PSVs and installations are the focal point of this article, but only as these relationships are experienced by members of PSV crews. This is important to keep in mind because the relationship concept commonly evokes the idea that relationships can be objective entities that exist independently of the people who experience them, and can be understood independently of them. This article does not build on that assumption. It builds on the theoretical idea that relationships are always only experienced from the perspective of one of the participants. In the present empirical context this is particularly pertinent as actors on PSVs never interact directly (i.e. face to face) with actors on installation, and as such their relationships are never anything but how they imagine each other.

Even though cargo delivery operations have been extensively researched, relationships between installations and vessels remain understudied. The few articles that deal with this relationship all argue the same point; that the balance of power in this relationship is structurally uneven and heavily in favour of installations. (Antonsen 2009, Kongsvik et al. 2012, Solem et al.). This point is convincingly argued and will not be dealt with here. The trust issues are still unexplored, however. There is, as of today, no literature that seeks to understand how PSV crews assess the trustworthiness of installation crews and how these assessments often conclude that their trustworthiness is low. In addition, there are no studies that explores how such trust assessments may lead to decreased safety. This article seeks to fill both these empirical gaps.

3. Method

This article presents qualitative research that explores the dynamics of how PSV crews build, maintain, and change the meaning of the relationships between themselves and crews on installations.

When reading an article presenting qualitative research it is important to keep in mind that it differs from quantitative research on almost every parameter of research activity. The two kinds of research ask different research questions, employ different methods, analyse the collected data in different ways, scrutinise the methods by different methodological means, require different involvement by the researchers and frequently build on different ontology and epistemology. Texts that present the two different kinds of research also commonly have different structures. (Cresswell and Poth 2018).

Qualitative research asks questions that seek to discover the identity of phenomenon; what they are, the elements they consist of, how these elements are combined to make the phenomenon what they are, how they came to be what they are etc. (Leedy & Ormrod 2021). Quantitative research, on the other hand, ask questions about how phenomena, about which sound qualitative knowledge is already established, are distributed in time and space; how many there are, where and how they cluster etc. Both questions are scientifically important, but neither can be reduced to the other. Quantitative research asks questions that can (and most usually must) be answered with statistics. Qualitative research questions, on the other hand, cannot be answered statistically because it provides knowledge about the identity of the entities that are to be counted, but it does not count them. Quantitative research totally depends on qualitative knowledge because it is not possible to count how frequent a particular phenomenon occurs until one has solid knowledge about what it is.

Uncertainty is a fundamental characteristic of knowledge, and the purpose of science is to continuously explore and reduce that uncertainty. One of the common sources of epistemic uncertainty is that the human producers of knowledge may mis-perceive, mis-interpret, and mis-represent the phenomena that they try to observe, describe and understand. In other words; whether it is possible to trust the specific knowledge claims that are produced and communicated by specific individuals about specific phenomena. This problem is generally referred to as the "validity" problem, and in superficial terms validity means that the claim about something corresponds to what that something really is. Philosophically this raises a number of unsolved epistemological and ontological questions about what reality is, and whether it is possible to develop objective and true knowledge about it. This is not the place to present that debate, but the consequence is that no matter how one tries to solve any validity problem, some uncertainty always remains.

In scientific methodology literature many different kinds of validity problems have been identified (see e.g., Christensen, Johnson & Turner 2014; Leedy & Ormrod 2021; Cresswell and Poth 2018), but in general they all boil down to two problems, commonly (but not universally) referred to as internal and external validity.

Internal validity basically means that the method really is appropriate to gather data that will really answer the research question. In other words, that the data is relevant for producing knowledge about the phenomenon being studied. External validity basically means that it is possible to generalise from the data, collected from and about a limited instance of a phenomena, to all instances of the phenomena. Internal validity is concerned with whether observations, interpretations, analysis and understanding of a particular instance of a phenomenon actually describes/measures, interprets, analysis and understands it as it

really is. External validity is concerned with whether the claims made about a particular instance of a phenomena can be generalised to all instances of the same phenomenon. In other words, to what extent and in what ways the claims about that one instance are representative of that phenomenon in general.

In some methodology literature (see e.g., Christensen et al. 2014) the term "internal validity" is given a very specific definition restricting the term to only refer to claims concerning cause and effect. In other literature it merely refers to whether the data are relevant for answering the research question or that it improved the general credibility of the study, even if the question is not about cause and effect. When using the term, it can therefore be wise to clarify how it is used. In this article validity simply means relevant and/or credible.

As mentioned above, qualitative and quantitative research asks fundamentally different questions and seek to develop fundamentally different kinds of knowledge. Consequently, they also contain different kinds of epistemic strengths and weaknesses, and face fundamentally different kinds of epistemic ("validity") challenges. A rule of thumb is that qualitative methods provide a number of tools that decreases doubts about the relevance of the observations, descriptions, measurements, interpretations, analysis and understandings, whereas quantitative methods are poor in this respect. Quantitative methods, on the other hand, are strong when it comes to reducing doubts about external validity (generalisations), whereas qualitative methods provide few (if any) tools to ensure that the observations etc of a few instances of a phenomenon can be generalised. This difference in methodological challenges is so fundamental that many scholars no longer use the same terms for the "validity" challenges that qualitative and quantitative research face. The term validity is reserved for quantitative research, whereas in qualitative research one talks about credibility, relevance and transferability (Lincoln & Guba 1985).

This article presents a qualitative study, based on ethnographic fieldwork, of a particular phenomenon called cargo delivery operations at the Norwegian Continental Shelf. In this kind of study researcher bias is one of the main, potential methodological weakness due to the role of the researchers and their involvement in the collection and analysis of data. In quantitative research it is fundamentally important that the researchers do not interfere with the collection of data, and do not analyse the data until all have been collected. In qualitative research, however, this rule does not apply. Here the researchers are also the data collection "instrument", and they begin their analysis of data at when the first data is collected. The researcher records a piece of data, it triggers off an idea, inspired by theory. The researcher then goes to the theory, explores how that informs the data, goes back to data collection looking for more data that falsifies or supports the idea generated by the earlier data, etc., etc. One of the characteristic traits of qualitative research is this circular "dance" back and forth between data and theory; a "cycle of putting theory into data into theory (that) can produce new meanings" (Collins & Stockton 2018p. 6).

This circular movement frequently also reflects in the ways that the research is presented, leading to articles with a distinctly different structure than what is common in quantitative research. In quantitative research, once the data collection method has been designed, the actual collection and analysis of the data should proceed without any interference by researchers. Hence in quantitative research articles the researchers try to remove themselves from the text as much as possible in order to reflect that they have not inappropriately interfered. The data is presented as "objective findings" in a chapter separated from the presentation of the theory that is used to discuss the findings. Most importantly the discussion is clearly separate from findings, because it is only in the discussion that the researcher is allowed a presence.

None of these concerns are important in qualitative research. On the contrary, researchers are heavily involved in every step and personally record and analyse the data as they are collected and understood. The researchers continuously draw on theory both to identify and understand data. Sometimes the collection of data also leads to reflections on the existing theories, leading to proposals for changing the theories. In research articles that present qualitative research there is thus no need to remove the researcher from the process, there is no need to present the findings separately, thus pretending that they are "objective findings" collected in ways that maximally prevent and preclude bias. Such articles may deliberately show how the researcher is involved in every step, from reviewing literature, to collecting, analysing and discussing data, as well as how all these aspects of the research process are involved in each other.

This does mean, however, that researcher bias is a potential weakness, and a source of some uncertainty. The only ways for quantitative research to try and ameliorate this uncertainty are to i) to be critical of and scrutinize one's position and perspective, both observational and theoretical; ii) find observations and analysis by other researchers in order to compare one's own descriptions and claims.

As mentioned, one of the methodological advantages of qualitative research is that it provides a number of tools to ensure that the observations, interpretations and analysis are relevant for understanding the phenomena that are studied. On the other hand, as qualitative research necessitates studying a few (sometimes only one) instances of the phenomenon, producing thick descriptions (Geertz 1973) of it, this method provides few and poor tools that can ensure that those descriptions are generally valid for all (or most) instances of the same phenomenon. In quantitative research this problem is called "external validity" and "generalizability". Most qualitative researchers call it "transferability", i.e., whether the knowledge produced by producing thick descriptions of one or a few instances of a phenomenon are transferable to other instances of the same phenomenon. This is a weakness that scholars in methodology have not managed to overcome and to my knowledge there are only two ways that this weakness can be rectified: i) Find other research literature that describe the same phenomenon; ii) Do more observations, of the same phenomenon, at other times and places. For some kinds of qualitative research this is relatively easy, e.g., when conducting semi-structured interviews. The number of interviews can be extended until a stage of saturation is achieved. Saturation basically means that the answers to the interview questions begin to repeat so that one more interview fails to produce any new data. Saturation is, of course, a crude tool to achieve generalisability; it may be that the researcher has accidentally chosen a to interview a set of homogenous outliers. The only way to overcome that weakness is to keep interviewing until a statistically sufficient number has been reached in order to commit one's data to more rigorous validation tests. This solution is, obviously, very laborious and costly. Generally, it is also accepted that saturation is a sufficient indicator of transferability.

Regardless of nomenclature, any scientific work needs to explore how the methods used, the data collected, and the analytical inferences made contributes to in- or decreasing the validity of the knowledge claims that it makes. Consequently, I discuss the potential researcher biases and transferability issues with my observations, interpretations, analysis and re-presentations when I present my research below.

As mentioned above, anthropological qualitative research is different to quantitative research in almost all aspects. Some readers may find this difference confusing or even annoying. In order to facilitate the reading, the text below provides clear signposting about the coming sections, and why the structure is as it is.

The research presented here builds on qualitative data gathered by the author, through ethnographic fieldworks, semi-structured interviews and informal talks with informants, predominately PSV bridge officers and deck crew. Seven anthropological fieldworks were conducted between 2014 and 2016, four offshore Norway, one offshore Australia, one offshore Labuan in Malaysia and one offshore Scotland.[4] Each fieldwork lasted three to five days. In addition to field-observations informal talks with ship brokers have provided corroborating data. This

[4] The latter three fieldworks are included for comparative purposes.

information is not essential for the core argument, however, and consequently raise no concerns regarding the validity of the data.

The fieldworks included interacting with officers on the bridge, hanging out in the dirty mess with the deck crew, observing ABs at work on deck as well as participating in everyday activities such as eating with the crew, lounging in the TV room, working out in the gym etc. All the fieldworks were conducted according to methodological standards in contemporary social anthropology (see e.g. Okley 2013, Robben and Sluka 2012, Whitehead 2005). Extensive notes were taken throughout.

Participant observation implies continuous interactions that includes dialogue that varies over a scale from small talk to "informal conversational interviews" (Allen 2017). The latter typically evolve spontaneously from everyday conversations when these turn to topics that the researcher finds worth inquiring about in greater detail. A conversation can thus gradually turn into an "interview" in the sense that the researcher asks more detailed and pointed questions than what is common for actors who just work together or socialize (Whitehead 2005). Informal interviews usually end in an equally gradual fashion and when finished informants may not even identify them as "interviews. The questions during these "interviews" generally revolved around safety procedures, and the crew-members thoughts and practices around these. However, as these "interviews" were informal, formal interview guides do not exist. Nevertheless, all conversations (whether classified as informal interviews or not) were recorded, and depending on the method of classification, between 25 and 50 informal interviews were conducted during these fieldworks. The exact number is not methodologically significant, however, as the data is not meant to be analysed statistically.

Observations began with a broad scope, and gradually became more focussed as the issues that were important to the crew came into focus. This also meant that the relationship between PSVs and installations gradually took central stage. Studying relationships is what social anthropology is about, and usually that means observing interactions that are rich in detail. Relationships between crews on PSVs and installations are different as they are difficult to observe directly and the observations do not yield rich details. Interactions between PSV and installations crews are exclusively via media like radio, phone and email, and as a researcher I only observed one side of the communications. I also listened to PSV crew talk about installation crew, but I was never given an opportunity to do fieldwork on installations and thus never observed that side of the relationship. Consequently, the relationships described and discussed in this paper have only been observed "once removed" and the descriptions are of "virtual" relationships as they are imagined by the researcher on the basis of observations of one of the participants. This may, of course, reduce the validity of the data. On the other hand, my observations are congruent with those of several other researchers (Antonsen 2009, Kongsvik et al. 2012, Solem et al. no date) and the doubts about validity are thus not severe.

4. Safety theories

Signpost: This chapter positions this article within the overall field of safety research. It argues that there is a gap in this overall research when it comes to understanding how attributes of relationships contributes to increasing or decreasing safety in operations.

The research literature on safety is gigantic and it is not possible to even sketch an overview of it in this article. Instead I present some points from the literature, as well as my own reflections, that either inform or provide the theoretical context for the analysis.

Contemporary safety research contains two contrasting models of what safety is and how it is achieved (Dekker 2004). The engineering model still dominates (Bieder and Bourrier 2013), but a model based on social science is gaining ground (Gilbert, Amalberti, Laroche & Paries 2007). The engineering model is top-down, rationalistic and optimistic. It assumes that all risks can be discovered and removed through logical analysis and implementation of the correct procedures. The social science model, on the other hand, sees safety behaviour as routines that develop from bottom-up, emerging from experience. It studies "*What usually happens in the normal course of high-risk activities*" (Gilbert et al. 2007, p 969) and assumes that reality is too complex to create procedures for all eventualities. It argues that deviations will always happen and sometimes are necessary in order to actually act in a safe manner. Providing room for practitioner discretions is thus necessary as it is the practitioner who will be at the site if and when something is about to go wrong and for which the procedures may not fit.

The present article builds on a social science approach to safety studies and investigates "*the real conditions under which safety is produced*" (Bieder and Bourrier 2013p. 4), but from a different perspective than what is common. Social scientific safety studies usually focus on individual behaviour; i.e. on what actors do (Dekker 2004); on organisational or structural conditions influencing or constructing the context for what individuals do (e.g. Perrow 1984); or the ideas (beliefs) and emotions that supposedly influence what individuals do (e.g. INSAG 1986).

My focus is different. I wish to understand how relationship factors, between and among actors performing risky operations, generate safety, danger and risk. This perspective is presently lacking in safety science. To the extent that relationship factors (such as trust, identity and belonging, commitment and legitimacy) have been studied these factors have been conceptualised as singular ideas or emotions (Conchie & Donald 2006, Jeffcott, Pidgeon, Wayman and Walls 2006) or as isolated effects of ideas (Luria 2010) rather than as the actual contents of the relationships among operators.

Above I stated that my focus is on relationships as experienced by only one party to the relationship. There may thus seem to be a contradiction here, between studying the "actual contents of relationships" and studying the contents as experienced by the seafarers. The contradiction is only by appearance, and not a logical problem. The contents of a relationship can only exist as ideas, images and emotions in the mind/body of individuals, and as such cannot have any other existence than as an imagined entity. At the same time, humans' image different kinds of entities; we imagine an I, and a you and a relationship between I and you, thus giving all of these entities specific kinds of ontological statuses. We imagine that the contents of the I is different to the contents of the you and certainly different to the contents of the relationship. Concepts like trust, friendship, contempt describes the contents of the relationship.

The absence of a relational perspective is remarkable considering that most risky operations are complex co-operations; interplays between and among a number of individual operators who constantly act and react to each other. Understanding how safety is achieved thus necessitates understanding relational attributes such as how trust and trustworthiness is generated, how and why and when acts of subordination or deference unfold, how reciprocal acknowledgments of respect or contempt, shame and guilt etc. constitute the actors in relation to each other.

5. Trust; a discussion and refinery of theory

Signpost: Chapter 5 presents a detailed and thorough presentation and discussion of theory about trust. It has two aims; One aim is to present and argue for a perspective on trust that sees it as an emergent phenomenon produced through a continuous assessment of trustworthiness. The other aim is to present the theory of trust that is used to analyse the empirical data.

Trust is an ambiguous term (Bauer 2014, 2019) with both emic and etic (Morris 1999) meanings. In simple terms emic is the "common sense" meaning of a word, sign, metaphor etc. Emic terms are often ambiguous and one term may refer to many different concepts (ideas) at the same time. Etic, on the other hand, refers to terms and concepts developed by academics for the purpose of scientific analysis. Etic concepts need to be precise and clearly defined.

As an emic term trust is very rich and fundamentally confusing. It is used in connection with anything humans can be uncertain about but still wish to predict and relate to 'as if' the uncertainty and doubt did not exist (Deutsch 1958). Academics have tried, and failed, to transform this ambiguous emic term into a clearly defined analytical concept to be used for scientific analysis (Bauer 2014, Ashleig and Stanton 2001). Already a decade ago more than 70 different definitions of trust existed in the field of organisational studies alone (Seppänen, Blomquist and Sundqvist 2007) and no universally accepted etic definition of trust exists at present (Ashleig and Stanton 2001).

It is not possible to present all the existing academic definitions in this article (see Siebert, Martin, & Bozic, 2016; Bauer 2019 for overviews.) What needs to be said, however, is that those definitions that dominate within organisational studies, and particularly in safety studies, assume that trust is a phenomenon that can be described as a relatively stable and one-dimensional entity that can be easily quantified. The purpose of such simplistic definitions is, of course, to make it possible to measure how much trust there is in a relationship, or an organisation, at any given time. As an example, the most commonly used definition is that "trust is the willingness to be vulnerable" (Mayer, Davis & Schoorman 1995). There are a number of problems with such definitions, the graver being that they necessarily fail to grasp the complexity of trust because they focus on the person who is "willing" and forget to investigate the relationships between the person who is 'willing' and the person who potentially could inflict harm. They also tend to lead to static descriptions of the degree of one kind of trust that exists at a specific point in times and fail to understand the processes whereby trust is achieved, maintained and lost. As far as the relationship between trust and safety is concerned research building of such definitions also tend to assume that more trust is good and the more general trust there is in an organisation, the higher the safety. This assumption has obvious weaknesses (Conchie & Donald 2006, Schoorman, Mayer & Davis 2007, Mayer et al. 1995) and most people would be able to think of situations when people failed to avoid accidents because they trusted something or someone too much.

Hence a different, more nuanced and richer understanding of trust is necessary in order to understand the complexity of the meaning of the concept, as used by a variety of actors in a variety of different contexts and for a variety of different purposes. In my previous article I argue that trust needs to be understood as a heuristic rather than an analytical concept. I stand by that claim, which does not preclude being inspired by attempts at formulating strict and analytical definitions. It just means these definitions are treated as yet one more perspective on the concepts, enriching our understanding of it, rather than restricting that understanding.

For the purpose of the analysis presented in this article I have taken considerable inspiration from Bauer's (2019) proposed definition of trust. He suggest that *"situations of trust and trustworthiness can be described using parameters (normally Ai = truster; Bj = trustee; Xk = behavior) and concern trustee's behavior to which a preference by the truster Ai is attached. Both concepts designate probabilities. Trust equals a truster's subjective estimate of the probability that Bj will behave as preferred by Ai. Trustworthiness corresponds either to the "correct" probability (as belief), or to a probability in the frequentist sense namely the share of trustworthy* vs *untrustworthy behavior … by trustees* (p. 6)[5].

Another way to say this is that a person expects (or hopes for) a certain behaviour from another person at a specific time, then estimates the likelihood that the other person will actually behave as expected, and the trust is the result of that assessment.

This definition highlights the importance of studying both trust and trustworthiness, and that from the perspective of a specific actor the point is not to have a lot of trust in another, but to find a level of trust that corresponds with the trustworthiness of the other.

5.1. Trust and risk

Trust is is intrinsically linked with risk (see e.g., Bauer 2019, Holmström 2007, Luhmann 1988, Luhmann 1979, Mayer, Davis and Schoorman 1995) in the sense that there is no need to trust anything if there is no possibility of anything going wrong. It is only the moment that it is possible to imagine a negative deviation from what we are used to, and would want to happen, that it makes sense to say that we trust that the usual outcome will happen.

Understanding trust therefore necessitates a few words about risk. Within risk management risk is usually defined as a combination of the probability of an undesired event and the magnitude of the consequences if the event were to happen (see e.g. Amundrud, Aven and Flage 2017). This may be a good definition for the purpose of quantifying risk, but it does not make much sense as a resource for understanding how humans understand and handle risk in everyday situations. As Kahneman (2011) has shown, most humans have great problems grasping what probability is about. Consequently, I suggest, in line with Luhmann (2000) that the common sense meaning of risk has more to do with uncertainty than with probability and consequence.

Risk and trust are thus both about uncertainty and when we conceptualise risk and trust this way it becomes clear that trust is, in some ways, a strategy for managing or handling risk (Luhmann 2000, p. 95). Facing uncertainty there are two different strategies humans can adopt in order to achieve a sense of certainty. In any real situation humans may mix both, and it is rare that specific individuals only follow one. For the sake of clarity, however, they are here presented in their "pure" form. Borrowing from Luhman I call these options "confidence" and "trust". The confidence option is akin to fatalism. It is based on faith in some outcome or another and that here is nothing a person can do. The outcome is written in the stars and all a person can do is have faith that their time is not up yet. Trust, however, implies gathering information, assessing the available signs and deciding to act in ways that will lead to desired outcomes. Trust is an attempt to influence the world and the future whereas confidence only hopes for the best. Confidence and trust are thus opposing strategies for dealing with uncertainty. The former seeks to overcome uncertainty by ignoring it and promotes behaviours as if no doubt exists. The latter embraces the doubt, explores it, seeks to eradicate it as far as possible and then chooses one course of action over several others. In practical terms both achieve the same result: To establish a sense of certainty in situations where certainty actually does not exist (Luhmann 1979 *in* Möllering 2001p 409).

Even though the result is the same, the two strategies prescribes mutually exclusive steps towards the result. Confidence is "blind" in the sense that it requires no information, no calculation and no justification in hindsight. All it requires is faith and the ability to leave the outcome of the situation to something or someone else: Fate, God, gods, spirits, luck, coincidence etc. The confidence strategy thus never faces, challenges and eradicates doubt. It does not change our understanding of that which we are uncertain about and as such endlessly recreates the necessity to have the same kind and same degree of faith.

Trust, on the other hand, necessitates seeking knowledge and builds on experience. It is a process of calculation whereby doubt is exposed and eradicated, leading to ever greater degrees of certainty, a reduction of risk, and less precarious decisions to trust.

Paradoxically, trust is not only a strategy for dealing with risk, but also a generator of risk. As we gather more information and build more knowledge about how things may go wrong, we also discover new dangers. Our attempts to handle those risks then produce new and often unforeseen dangers (Beck 1992). Regardless of how we trust someone (be it distrust, little or lots of trust) trust-actions always carry new dangers because acts that have been executed cannot be undone. They

[5] A note on terminology: It is common to use the words 'trustor' to refer to the person who trusts and 'trustee' to refer to the person who is trusted. However, as Bauer (2019) uses the word 'truster' instead of 'trustor' I will do so as well to avoid confusions.

may also have unintended consequences and as such create new uncertainties as they dissolve others.

Certainty is thus a continuum with both a negative and a positive pole; total uncertainty at the negative end and (a dream of) total certainty at the other. Uncertainty means that we are unable to foresee what will happen, and certainty means the opposite. This, of course, does not mean that certainty means that things will go in our favour, just that we are able to predict it. Trust is also distributed over a similar continuum and in common language we use the words trust and distrust when we are quite certain how things will turn out. Distrust is used when we predict that there is a great chance things will go wrong, trust is used when there is a great chance things will go right, and no trust is used when the chance that it may go right is low, but we do not expect to be harmed either. In other words, when it may go any which way.

5.2. Trust is a value

A strategy is a general model of actions for achieving something that is valued. This means that if trust is a strategy then it also has something to do with values. An interesting feature of trust is that in everyday language it is talked about both as a value in itself, and a means to achieve other valuables. On the one hand, trusting others who are trustworthy and honour the trust they have been given, is a positive experience. On the other hand, trust is not usually a value that we strive for in itself, even if it feels good. Trust is usually valuable in relation to something else that is at risk, some other valuable that could be lost or destroyed. These other values at stake are things like life and health, a loving relationship, honour, a good reputation, friendship etc.. Trust, then, is like freedom of speech, democracy and a fair justice system; a valued means to an even more valued end.

Humans strive to optimise their values; i.e. to maximise gains while simultaneously minimising losses (Barth 1966). In some situations, it is more important for actors to avoid or cut losses than to maximise gains. Individuals therefore frequently fail to act and take advantage of opportunities that could lead to a gain out of fear that they might fail, and thus incur greater loss than if they do nothing. Optimisation of values also takes the form of balancing different values against each other. Values frequently do not harmonise, and may even be directly in conflict with each other. The point is, when trying to understand why people act as they do it is necessary to take into consideration that they may seek to optimise several values at the same time, and that the desire to avoid a loss of one value can overrule the desire to profit on another.

Trust, then, is always in relation to specific other values. We never trust in general, we always trust specifically, specific people or institutions in specific situations. And also, we trust in relations to several specific values that are at stake in specific contexts (Mayer et al. 1995, Schoorman, Mayer and Davies 2016). This means that trust cannot easily be generalised. Just because it is possible to trust another person in one specific context, with regards to one specific value, does not mean that one can automatically trust the same person with regards to the different value in the same context or the same value in a different context (Ashleig & Stanton 2001).

In addition, there are usually different levels of trust in the same relationship at the same time, in the sense that a person may trust another in relation to one issue and one set of values, but not trust him much in relation to another set of issues. Every time we trust someone there is also a risk of getting it wrong. A person may have been a safe operator for 30 years, and his colleagues may have very good reasons to trust him. That does not mean he is incapable of making mistakes, of losing his competence, or of turning against his colleagues.

Trust is thus always fraught; it is never achieved once and for all and it can always be lost.

5.3. Trust and trustworthiness

This brings us to yet an important point for how trust is understood in this article. As a relational concept trust only exists in tandem with trustworthiness. Trust can be thought of as "something" that people "give" each other (Sørhaug 1996) in the sense that to trust is to give the others the benefit of the doubt. Doubt always exists because no one can ever know 100 % for sure how trustworthy the other person will be at any given time in the near future. To trust, whether it is distrust, no trust or lots of trust, is thus always an assumption about the trustworthiness of others.

Trustworthiness is generally conceptualised as consisting of three personal attributes: i) Benevolence (i.e. the intention to act in ways that will benefit the other); ii) Competence (i.e. to possess the knowledge, skills and resources needed to behave in ways that benefit the other) and iii) Integrity (i.e. to give and give off honest signs about one's benevolence and competence) (Mayer et al. 1995, Grimen 2009).

In this perspective, to trust someone means to assess the other person's trustworthiness, decide on a particular level of trustworthiness, and then take a chance that other person will act in congruence with the assessment. The assessment may be wrong, however, on any one of the three attributes. We may have good reasons to hope that the other is friendly and thus trust him, but still get hurt because he was not competent. Or we may believe the other is both friendly and has the necessary knowledge, but still get harmed because he did not have the resources needed to keep us safe. The classic scenario of countless Hollywood movies is to get conned, that the other gives off false information about his trustworthiness and we get stung because we trusted a villain. On the other hand, it is not without risk to be too cautious either. Deciding to distrust may result in the loss of a potential friend because we offended him by refusing to appreciate his trustworthiness.

5.4. Trust, trustworthiness and safety

Safety researchers have been interested in trust for a long time. According to Conchie and Donald (2006):

"Trust has been described as a lubricant for open and frequent safety communication (Reason,1997) *and as a facilitator of effective safety leadership (Carroll, 2002; O'Dea & Flin, 2001). Trust has also been ascribed a role in the success of safety initiatives designed to improve safety attitudes and performance (Cox et al., 2004; Fleming & Lardner, 2001). Similarly, risk theorists have associated trust with effective risk communication (Kasperson et al., 1992), reduced risk perception (Viklund, 2003), and effective risk management (Siegrist et al., 2003)."*(p. 1151).

As recent as 2017 Gausdal claimed that *"interpersonal trust (…) among seafarers, seems to be a prerequisite and an indirect factor, or mediating variable, that influence safety-related organizational outcomes positively and seems to reduce human errors."* (p. 197).

A similar sentiment is expressed by Sætrevik et al. (2018) who claims that "*trust is one of the factors underlying effective social exchange and is thus essential for effective communication*" (page number not provided in the online version). In the context where the quote originates it is clear that "effective communication" means communication leading to safe behaviours.

Others are not convinced that trust only increases safety, but see trust as a potential threat to safety, arguing that too much trust may lead to group think and decrease in personal initiative and responsibility (Conchie & Donald 2006; Schoorman et al. (2007) claim that *"Trust is the 'willingness to take risk', and the level of trust is an indication of the amount of risk that one is willing to take*" (p. 346). In an earlier publication he and his colleagues warn against *"Blind" trust, defined as a propensity to "repeatedly trust in situations that do not warrant trust"* (Mayer et al.1995, p. 715) and claims such trust may increase risk rather than reduce it (Gausdal 2017).

In my opinion both sets of claims are misguided because they focus too much on trust at the expense of trustworthiness. I argue that trust in itself contributes neither positively nor negatively to safety. A logical inference from the previous sub-section is that problems with trust emerges when the trust we give does not fit the trustworthiness of the

person we give it to. For most safety purposes it is irrelevant how much one operator trusts another if the trustworthiness of the other is not considered. If the other is not very trustworthy then it is clearly dangerous to trust him a lot. But the inverse also holds - giving no or little trust to a highly trustworthy operator can be unsafe as it is likely to cause resentment and anger in the short term, and decreasing motivation to be trustworthy in the long. Safety, in other words, increases when operators get the trust assessment right, regardless of whether the other operators is trustworthy or not.

This does not mean, however, that trustworthiness does not matter. Quite the contrary. Of the two concepts trustworthiness is clearly of greater importance for understanding how safety is achieved. Trustworthy persons are benevolent, competent and honest, meaning that they intend and manage to act in ways that benefit others, and they do not lie about any of this. To be trustworthy is thus the same as to act safely. The same does not hold for trust. A person who is skilled at assessing the trustworthiness of others is not necessarily trustworthy - and thus not necessarily a safe operator. The professional con-man is a good example of someone skilled at reading trustworthiness in others in order to use it to defraud them.

5.5. Influence between trust and trustworthiness

In a safety perspective it is thus trustworthiness that matters, not trust as such. However, trust and trustworthiness commonly influence each other and in order to understand how trust influences safety it is necessary to understand how trust and trustworthiness mutually influence each other too.

DeSteno (2014) argues that people become trustworthy when they need others, and therefore need to trust others. He claims that people are more likely to trust trustworthy people, and more likely to be trustworthy when their acts of trustworthiness are appreciated and trusted. This argument make sense at an abstract level and for post hoc explanation of how trust develops. It does not, however, provide an adequate understanding of how trust and trustworthiness plays out in real life, when actors do not have the benefit of hindsight. In other words; how specific actors, in specific contexts, try to assess each other's trustworthiness without having much information about each other.

In such situations all the actors face the same challenge; to judge the trustworthiness of the other, and then give the amount of trust that matches the trustworthiness the receiver actually will demonstrate in the future. All manner of things can go wrong in this process. The less information, the greater the possibility that the other may not be trustworthy, and thus the greater the risk inherent in trusting. On the other hand, not showing enough trust can offend the other. Showing trust too late can make the other suspicious, and showing too much trust too early can make the other take advantage of the one who shows trust.

Maximum safety is obviously achieved when all the actors are highly trustworthy and also give each other a lot of trust. Giving trust that is not matched by trustworthiness is, on the other hand, very dangerous. Getting the assessment right, so that trust matches trustworthiness, is highly difficult and safety is reduced from errors on both sides.

In sum, trust is always an issue when anything valuable is at stake and there is some degree of uncertainty about whether the outcome will be loss or gain of the values involved. Trust, the assessment of the trustworthiness of the others and the decision about how much to trust, is the basis for overcoming this uncertainty, making it possible to act in the situation. Getting the assessment right, so that one trusts the other to the same degree that the other is trustworthy, results in the optimal outcome of the values involved. Lack of information about each other is an obstacle to getting that assessment right, and as such lack of information about each other increases the risk and reduced the safety.

6. Findings and discussions

Signpost: Chapter 6 presents findings and discusses them as they are presented. As mentioned earlier, qualitative data are collected, analysed and interpreted from the moment they are collected. The presentation below follows the same pattern, and findings are presented and then immediately discussed before the next finding is presented.

As mentioned, the research aim of this article is to provide insight into how PSV crews handle fraught decision-making situations, characterised by conflicts of interests between them and installations, complicated trust challenges and the need to balance the material risks of accidents against the social risks of a bad reputation as defiant, lazy and incompetent operators.

Before I present my findings, I wish to highlight a few important contextual factors. First, that the majority of my observations indicate that relationships between PSVs and installations are predominately friendly and that they usually cooperate efficiently, effectively and safely. As this article focusses on "negative" aspects of these relationships it is important to keep in mind that this negativity does not dominate the relationships. The negativity emerges, and influences interactions, under specific circumstances and in ways that sometimes increase the risk of the operations. The negativity is not predominant, however. Both Kongsvik et al. (2012) and Sætrevik et al. (2018) have made the same observations, indicating that researcher bias is either shared by all these researchers, or that it is not a serious validity problem.

Second, that this article is only concerned with factors that influence a limited number of aspects of cargo delivery operations that have been identified as particularly dangerous.

Third, that relationships between PSVs and installations only exist via technologies like radio, telephone and e-mail. The researcher could therefore never observe these relationships directly, and relied on observations of PSV crew, plus their stories about installations. This means that this article is really about the relationships as experienced by the seafarers and seen from their perspectives. All relationships are always only experienced from the perspective of one of the participants, so this is not a fundamental problem. However, when saying that one wants to understand a relationship, it is easy to fall for the illusion that relationships can be objective entities that exist independently of the people who experience them.

Fourth, that PSV crews hardly ever have detailed information about crew members on installations that they have been dealing with during delivery operations. This contributes to a general tendency for PSV crews to talk about installations as total entities, not as teams made up of individuals who have very different positions and performs different kinds of tasks.

6.1. Ordinary irritations and disrespect

Like all fieldwork, those I carried out on PSVs began with getting to know the crew and the ship. While we sailed I engaged in small talk with bridge officers and deck crew, asking questions about their jobs, and their answers frequently turned to issues in their relationships with installations. This preoccupation with the installations was common to all the PSVs I visited; offshore Norway and the UK, as well as in Australia and the South China Sea. The contents of the talk differed, however.

In Norwegian and UK waters their comments and stories about installations were peppered with negative sentiments, particularly about being treated disrespectfully. A classical story was about installations that discharge dirty liquid or powder over the vessel as it rests below the installation.[6] They also complained about lack of planning; installations that delay or interrupt operations without giving the vessel any information about what is happening, late or incorrect paperwork, and being pressured to accept undocumented backloads.

Antonsen and Bye (2015) found the same stories but refrained from

[6] Antonsen and Bye (2015) have made the same observations and confirm that discharge over vessels is a long-standing problem.

discussing their truth-value. They argue that these stories should rather be understood as "myths" (p. 131) that express a communal identity, and a common moral rather than factual observations about what installations really have done. According to Antonsen and Bye the stories say something about relationships among seafarers, rather than between seafarers and installations.

I agree with Antonsen and Bye that such stories can be understood as myths, that function to create identity among PSV seafarers. But I also believe they say something important about the relationships between PSV and installations in Norwegian waters. I collected such stories on all the PSVs I visited, but the contents of the stories were fundamentally different in Australia and Labuan. In both those contexts the stories carried specific messages about the relationships in those contexts and there is no reason to assume that is not the case in the Norwegian context too.

The fact that Antonsen and Bye (2015) also found these stories indicate that researcher bias is not a significant credibility problem in relation to this particular finding.

I label the stories above as "ordinary irritations" because they commonly refer to incidents that happen under ordinary circumstances, and when the weather is relatively fine. As these stories have been described elsewhere (Antonsen and Bye 2015) they will not be repeated here. They show, however, that PSV crews are used to being treated by installations in ways that PSV crews find disrespectful and condescending. These experiences are significant as a background for understanding the tensions that build, and the conflicts of interests that come to the surface, when the weather turns bad.

6.2. Weather window

During stormy periods PSVs leave port when storms are still raging and weather windows[7] are predicted to open, at the oil field, in the near future. The vessels then sail for ten to twelve hours through strong winds and high waves before reaching their destinations. PSVs are built for such conditions, and the sailing is not very risky, but the crew does not sleep well and are already a bit tired when the delivery operations commence.

At their destinations the PSV duty officer assesses whether a window has opened and if it is safe to get close to, and rest on DP, next to the installation for the duration of the delivery. The risks are different for every location and every installation. Even resting on different sides of the same installation offers different risks.[8]

Judging weather conditions in open seas is not an exact science. Conditions are perceived differently from a ship and from an installation, and PSV bridge officers may judge the weather as still too harsh when Operation Managers (OM) at installations judge it as OK. Whereas seafarers have an immediate experience of how the waves and currents influence the vessel, installation crew do not. Winds, currents and waves interact in ways that affect the vessel in ways that the installation crew neither perceive nor understand. In addition, PSV officers must consider the specific technical capabilities and limitations of their vessel, a challenge that installation OM's usually do not consider and are not qualified to do.

If the window is still closed when a PSV arrives the duty officer must decide whether to wait near that installation or go to the next. The longer the weather has prevented supplies, the more critical the installation needs it and the OM may become very insistent that the PSV stands by, ready to supply the moment the window opens.

Waiting on a window is usually rather demoralising for the sailors who become both tired and impatient. It is also potentially inefficient as a window may be open at another installation. PSVs usually serve several installations on every run and cannot sit and wait at one installation if it is possible to deliver at another. The PSV officer may thus initiate a change of sailing plan, and ask the traffic control centre for permission. This could, however, be a serious problem for the installation because the weather window may open after the PSV has left, but close again before it returns, and the installation may lose out on cargo they sorely need to prevent shutting down.

The consequences of a shut-down are, obviously, far more immediate and severe for the installation than for the PSV, and the pressure on the installation to avoid it is considerable. The installation may then transfer that pressure (Kongsvik et al. 2012) onto both vessel and control centre, aiming to ensure that the PSV remain stand by to deliver at the first available opportunity.

If the commanding PSV bridge officer determines that the weather window is open the cargo delivery operation will begin. Winds, waves and currents exerts huge force on PSVs and their engines and propellers run at high speed to produce the counter force needed to keep the ship in a fixed, and safe, position. Winds and waves constantly change, however, and the ship has to constantly adjust. Even though the DP computer calculates the forces and the changes, the DP officer needs to closely monitor the instruments to ensure everything works properly. A number of faults may happen; a DP signal may fall out or an engine may approach overload. Meanwhile, the other bridge officer monitors the delivery process; documenting the cargo that is on– and offloaded, the conditions on deck and how the lifted objects behave in the wind.

In addition to monitoring the DP and the delivery, the officers also closely follow how the weather is changing. Weather can change fast, and just because a storm is decreasing does not mean winds and waves are calming down smoothly. They may also pick up again and the weather-window can close at short notice.

Two of my fieldworks at the NCS took place during a winter when storms had raged more or less continuously for several months before the fieldworks took place. On both of these trips I observed prematurely aborted operations. Two of the observed processes leading to the decision to abort provided valuable insights into factors that significantly influences relationships between PSVs and installations. Below are summaries of my fieldnotes (original fieldnotes were in Norwegian, and the transcribed parts are translated by the author):

The PSV had experienced several aborted operations over the last few months, and I was told that the installations were starting to get nervous that they would run out of bare essentials and need to stop the production. Even on this run some of the operations had been aborted prematurely, before all the supplies had been offloaded. As our vessel approached a new installation all parties were thus highly motivated to get the cargo delivered and the ship's officer judged the conditions good enough to begin the lifting operation. After about one hour the weather deteriorated. The officer on the PSV and the crane operator communicated intensely about the conditions, exchanging comments about wave heights and wind speeds. The information was very technical and brief, however, comments like: "Wind just hit 38 knots", "That gust hit 40". Comments evaluating the weather were absent. The gusts bringing the wind speed over the limit occurred more and more frequently and suddenly the crane operator exclaimed: "No, that is it. We abort. It is not safe to continue". I sat right next to the officer in charge and could see a wave of relief wash over his face as he spontaneously slung his outstretched right arm, with a clenched fist, into the air and exclaimed: "Yes! It was they who stopped, not us".

The exclamation came spontaneously, and to me, sitting close by it expressed both an element of relief and victory. He, and his ship, had stood the test, had not failed, and now the pressure was over. It carried the message that to abort a delivery operation is a serious decision, and that it matters how the decision is made, and who makes it. This

[7] A weather window is a technical term for conditions that need to be met in order to consider it safe to carry out a specific operation during bad weather. The specific criteria vary depending on the operation. For cargo delivery operations significant wave height should, as a general rule, be no more than 5 m and middle-winds should not exceed 20 m/s (Norsok R-003 2017). These conditions should last 50% longer than the time the operation is planned for. For a more detailed discussion see Røyrvik (2012).

[8] Finding confirmed by Kongsvik et al. (2012).

impression was reinforced by another aborted operation on a different field trip at a different vessel.

The weather had been rough for months and the PSV had managed to deliver cargo at the first and third installation, but had had to abort midway through the delivery at the second. Conditions are always somewhat different at different locations and when they arrived at the fourth installation the weather window was open. It gradually began to close during the delivery and AB's, officers and crane operator worked as fast as they could, communicating intensively about the wind and the waves. The DP officer kept a keen eye on the quality of the DP signals, and monitored the strain loads on the engines, the speed and directions of thrusters and azimuth.

The change from bad to awful weather was not gradual and smooth. The wind came in gusts and the waves in uneven frequencies, heights and directions. While the operation unfolded the wind hit the 40 knots mark more and more frequently with individual gusts above.

As the conditions worsened the AB's increased their reporting of how they experienced it. Radio communication between DP officer, AB's and crane operator became increasingly intense. When the crane operator commented on a hard gust, the officer would confirm "Yes, my wind gauge just hit 42". Then a comment from one of the AB's "The waves are really picking up. The last one gave us a good jolt". "Yeah, I saw how it sprayed you" the officer responded. "Can't go on for much longer" the crane operator commented. "Yeah, I agree" the officer said, and then the AB let out a yell "Whoa, that was a tough wave. This is not good." These exchanges continued for approximately 10 more minutes, and then the crane operator exclaimed. "No, that's it. This is just getting worse. I reckon we should stop, what do you think?". "Yeah, I agree" the DP officer responded. That was the final word, the officer then radioed to the AB's to quit, the operation was over and the PSV continued to the fifth installation.

Even though the operation was technically over it continued to hold the attention of the crew. The officers and ABs talked about it at length over dinner, and even the next morning at breakfast; going over and over how the wind and waves had behaved, what each one had said, that is was the crane operator who had suggested stopping and confirming among themselves that stopping the???? was the right thing to do.

6.3. Uneven power, conflicting interests

Both cases demonstrate that the decision to abort is not taken lightly. This begs no further explanation; it is in everybody's interest that the installation receive the cargo they need to avoid shutting down. It does beg another question, though: Why is it so important how the decision is made, and by whom?

In the first case the crane operator made decision, unilaterally, and did not involve the officer on the PSV. The officer's face expressed relief; a tension was released. At the same time his exclamation "*It was they…. not us",* combined with a clenched fist thrown high in the air, carried a strong underlying message of victory and bravery. In the second case the crane operator had left the final word to the officer at the PSV. Hence there was no 'victory' over the installation and no sense of competition about being the braver actor. In addition, this meant the PSV was party to the decision, they were equally responsible for the abortion as the crane operator and as such they were potentially to blame for the cargo that did not get delivered. Consequently, the decision left a lot of uncertainty and anxiety, leading to the intense informal 'debriefings', and subsequent release of tension, as the PSV sailors celebrated how well they had handled the situation, and how well they had cooperated with the installation. This begs further questions: What are the factors that generate these tensions and such relief when the decision is made? And why were the two cases so different when they are both the same decision-making process?

The case I argue is that in spite of apparent differences the behaviours in both cases were generated by the same underlying factors: A general context where PSV have less power than installations (Sætrevik et al. 2018), and significant conflicts of interests exists between them.

These conflicting interests are:

- Installations only needs to think about their own needs, whereas PSVs need to consider the total delivery schedule.
- PSV crews have intimate knowledge of the safety limits for their vessel whereas installations do not.
- Time at sea during a storm is a burden for PSV crews, but not for installation crews.

Because of these conflicts it may be in the interest of a PSV to abort an operation, or refuse to stand by waiting for a window to open, when it is in the interest of an installation that the operation continues, or that the PSV waits till the weather improves. Combining these conflicting interests with the uneven distribution of power, and the possibility of being treated with disrespect, goes some way towards making sense of the tensions that emerged in the two cases described above. PSV crews have good reason to be wary of making unilateral decisions as they have reason to suspect that their decision may be ignored or overturned by installations. Antonsen and Bye (2015) provide empirical data supporting this argument, showing that the oil company may not only disrespect safety decisions made by PSV, but may go as far as accusing the PSV of using safety procedures "against" the oil company, as if the decision to act safely was merely a means to defy the rightful authority of the oil company (p. 138).

Sætrevik et al. (2018) found that some PSV officers sometimes experience that installations put pressure on them to continue operations even when they are at the margins of what is safe. One of the captains they interviewed said: "*The installations use whatever means of applying pressure they have available. ((They may say)) 'The operation is going to stop, we need ((this delivery)) with the highest priority' in order to make the vessels carry out the delivery"* (page number not provided in online version).

Referring to the methodological discussion in section 3 it is theoretically possible that the credibility of all the findings presented above are of low because they may be the product of bias on my part. As mentioned in section 3, researcher bias can only be reduced in two ways; the researchers scrutinising their own positions and perspectives, and by finding other research that either contradicts or supports one's findings. In relation to the observations presented above my perspective is that of a "landlubber". I have no training nor any significant experience as a seafarer. I did not have the identity as one either. Consequently, when my fieldworks began, I had no vested interests in any particular outcomes of my research. However, as my fieldworks progressed, and I only did research among seafarers, it is possible that their interests coloured my understandings of what I observed. Hence, it is also possible that there is a bias in the above findings, a bias towards the interests of seafarers in their relationships with installations. This does not undermine the relevance and credibility of my findings, however, because the aim of this study is to understand the interests of the seafarers. In addition, and as presented above, other researchers have found the same as me.

From the above it is reasonable to conclude that in order to understand relationships between PSVs and installations at the NCL it is also necessary to understand the uneven distribution of power, plus this conflict of interest. I argue, however, that these two factors are not sufficient because they are relatively easy to articulate and codify and are already written into formal agreements and procedures. As a matter for fact, they are recognised and clearly expressed in the foundational guiding principles pervading the NORSOK R003 standard for safe use of lifting equipment at the NCS (Standard Norge and Norsok 2017). This guiding principle is that that any operator who believes that an operation is no longer safe has the right, and the duty, to stop it. Even though this principle is not formulated as a rule it permeates the standard. It was also frequently referred to on all the fieldworks, and PSV crews firmly believe that they have this right. However, if this principle truly governed these relationships it should never be a problem how the decision to stop was made, nor who made it.

Consequently, something more than uneven power and conflict of interests must influence how these operators reach decisions about their

cooperation. My argument is that the missing pieces in the puzzle are trust, respect and reputation.

6.4. Trust and respect between PSVs and installations

As mentioned, trust is an issue whenever anything of value is at stake and there is a relatively high degree of uncertainty about the outcome of the interaction. In the kinds of situations described above there is absolutely something at stake. In the worst scenario both vessel and installation explode. In a slightly less serious scenario the installation has to shut down. There is also uncertainty. As mentioned, PSV crews never interreact face-to-face with installation crew and never know who they are interacting with. The crew on installations vary and though PSV crews, or rare occasions, recognise the voice of someone they have dealt with before they do know whose voice it is. Most frequently they do not. Consequently, most of the time interactions start from scratch, with a person at the other end about whom they have no previous experience, and thus no accumulated reason to trust.

Theories about trust are almost exclusively concerned with face-to-face interactions, or interactions between individuals and institutions. Hardly any studies exist of trust in interpersonal relationships between individuals who are 'once removed' and have minimal information about each other's identities. Still, even without empirical research data it is clear that such interactions necessarily imply large measures of insecurity about the trustworthiness of the other party.

In the above cases it is clear that the PSV crew had very little information about the trustworthiness of crew they interact with on the installations. In both cases the interactions unfolded gradually, and lots of technical information was exchanged. In the first case the information was accurate but said nothing about how the crane operator judged the situation. Consequently, the PSV officer did not have any indications about which way the crane operator was leaning. Being uncertain the PSV officer had to rely on his assumptions about the trustworthiness of installation crew in general, and consequently he did not take a chance on stopping the operation.

In the second case the interactions unfolded quite differently. The flow of information increased radically as the conditions deteriorated. It was not the intensity of the information that made the difference, however, but the content. The communication was not exclusively about technical issues, but peppered with judgements about how "bad" it was getting as well as acknowledgements of each other's situation. The crane operator even included questions to the PSV officer, inviting him to participate in the decision. The decision in the second case was thus a consequence of a gradual negotiation involving all the actors as "equal" participants in a common endeavour where all parties contributed equally to the decision to abort. The PSV officer gradually became less uncertain about the trustworthiness of the specific individual he was interacting with, to the point where he could trust the crane operator enough to make the final call.

The interpretation above provides a fairly comprehensive understanding of the factors influencing the decision to stop a dangerous operation, but still leaves some questions open. Above I claim that the values at stake for PSV officers are the physical safety of vessel and installation, to keep the installation operating and to avoid making decisions that installations may disrespect; i.e. ignore or overrule. Being treated with respect is a highly esteemed value among the PSV crew I observed and when people hold that value it is sensible to avoid situations where they are likely to be treated with disrespect. Developing behavioural strategies that will avoid provoking other actors who might treat them disrespectfully therefore make sense, particularly when that respect also matters financially. Lacking sufficient information about whether the other actors are trustworthy, in the sense that they will refrain from treating the PSV crew disrespectfully, means that it is sensible for the PSV crew to not trust them too much until they have proved otherwise.

This explanation makes some sense of the observed events, but still does not provide a fully adequate answer. The fundamental safety rule clearly states that any actor has the right and duty to stop an operation they believe to be unsafe. If this rule is taken seriously then there should be no fear of being treated disrespectfully, and no need for any more information in order to trust installation crews. Thus, the question still stands: Why is this rule not taken seriously?

The following episode provides an essential clue to the answer.

6.5. The value of reputation

On my way to a fieldwork offshore Scotland I travelled with some of the crew. The vessel had been late coming in from a cargo run and was in a port further away than originally planned. The journey therefore took a long time, and this gave us lots of time to get to know each other. I only had a week to complete the fieldwork, and as we approached the ship I asked if the changed location would matter. One of the deck officers said that it might, but then again, one never knows. "If the weather turns bad, and it has done that a lot recently, we may get stuck out there for weeks". He continued saying that during their last trip the weather had been really bad, and they had had to wait stand-by for three weeks at an installation that was running very low on supplies. The waves were up to ten metres and they got really tired. I asked if it was safe to get so fatigued and he said: "Not really". "So, what would have happened if you had said it was not safe?" I asked. "It would have been aborted and we would have gone to shore", the officer answered. "Why did you not do that, then?" I asked. He shrugged and said: "The contract is up for renewal quite soon. If we had used the safety card and called it off, we'd never get it renewed".

Even though this observation was from the UK sector subsequent data substantiates my impression that the same factors exists, in principle, among PSV crews on the Norwegian side. Above I referred to an episode, described by Antonsen and Bye (2015) when an oil company accused a vessel of using the safety system "against" the oil company when the vessel judged the weather to be so bad that it was not safe to sail. That situation illustrates that "playing the safety card" is risky on the Norwegian side too. It is not risky in a material sense. On the contrary; it would reduce the risk of material accidents. It is risky in a social sense; the value that may be damaged or lost by "playing the safety card" is reputation as a service-minded, competent and professional crew.

There can be no doubt that reputation, like respect, is of utmost importance to Norwegian seafarers. (Antonsen and Bye 2015). All the crews on the PSVs I visited were concerned about their reputation and engaged in a lot of talk about how theirs was a "the best ship in the North Sea", comparing themselves with other ships that are, obviously, not as good as theirs. There was a lot of talk about other PSVs that are less service minded, only do what they strictly have to according to their contracts and have reputation among the installations as "bad ships". The explicit plot of all this talk is that "we are the best ship", but an equally important sub-plot is that "there are bad ships, and we are not one of them". They were also convinced that the other parties in the larger cargo delivery chain (installations, the oil company in general and the depots) spread rumours about them, and that they were never sure if the rumours were flattering or damning.

Antonsen and Bye (2015) provide substantial descriptions and argument in favour of this claim and these arguments will not be repeated here. The important point, for my argument, is that it is of utmost importance for a PSV to have a good name. As I see it there are two reasons for this. On the one hand it is a matter of identity and pride, on the other hand because they believe a bad reputation may be detrimental to their ability to keep working in Norwegian waters. Whether this belief is true or not is immaterial. The important point is that PSV crews are convinced that it is true. That said, both research and hearsay confirms the belief: Sætrevik et al. (2018) state that installations may use "reward power (the chartering company may be reluctant to renew contracts with vessels that are seen as unreliable)" (page number not provided). Ship brokers on the west coast of Norway confirm that after the dramatic fall in oil prices in 2014, and the subsequent surplus of PSV

on the spot marked, there are ships with poor reputations that clients will not even consider chartering.

An essential problem with reputation is that the person that the reputation is about has no direct control over it. Reputations are formed through processes of inferences, assessments and judgements that are privy to those who hold the opinions and the contents of the reputation is commonly not explicitly communicated to those it is about. Consequently, it is fundamentally difficult for anyone to know, with a high degree of certainty, both what their reputation is and how they got it.

This high degree of uncertainty necessarily means that trust is fundamental issue whenever reputation is on the line. In the case of reputation, it is fundamentally difficult to obtain knowledge about whether the other party is trustworthy. In relationships between crews on PSVs and installations this uncertainty is even greater than usual because their interactions are brief and one dimensional. PSV crews thus have to do a lot of guess work when interpreting the little information they receive. For a PSV crew to trust that an installation is trustworthy, and that it's crew will give them a good name, they need information about their benevolence, competence, and integrity. From the perspective of the PSV an installation crew is trustworthy, and can be trusted to give them a good name, if the installation crew assumes that the PSV will reach both safe and efficient decision at all times. Specifically, the installation is trustworthy if it accepts that when the PSV says conditions are too dangerous, then they are too dangerous.

The PSV crews I observed had little reasons to assume that installation crews think this way, and Sætrevik et al. (2018) confirms that "*Several informants state that the personnel on the installations are not sufficiently familiar with the maritime industry, and what the tasks of different types of vessels are*." (Page number not provided in online version). They also report that some informants believe this problem is getting worse. Considering the potential consequences of a bad name it would thus be very risky for a PSV crew to trust that the installation crew they are dealing with understand and respect the nature of the decisions that the PSVs make. Hence it is also risky to trust that the installation will give them a good name. Kongsvik et al. (2012) observed that PSV at times put pressure on themselves to continue operations when weather conditions are on the margins of safe. It is a reasonable hypothesis that a substantial part of such "self-pressure" is a result of a desire to avoid getting a bad name in a situation where they do not have sufficient information about the trustworthiness of the installations they deal with.

Combining these insights about the uneven balance of power, previous experience about being treated disrespectfully and the risk of getting a bad name, makes both of the cases described above far easier to understand. In the first case the communication did not contain sufficient information about the trustworthiness of the crane operator for the PSV officers to trust that he would refrain from giving them a bad name. When the crane operator then made a unilateral decision to stop the operation he also took the full responsibility for the abortion. In other words, neither he nor anyone else at the installation would be able to "blame" the PSV and say they called it off because they were lazy, incompetent or defiant.

In the second case the communication was far richer. Having built up toward a decision to abort, the crane operator made the call, but not unilaterally and as an open question. The PSV bridge officer actually gave the final word. In this case the PSV officer had received a lot of information that he interpreted to mean that the crane operator was trustworthy. The information was far from complete, however, but the officer still made that final "leap of faith" and trusted that the decision would not be used against them later. The intense "debriefing" going on in the evening and over breakfast next day shows that the decision was still precarious. In the first case, after the crane operator had made a unilateral decision, the tension immediately dissolved. In the latter case the tension stayed with the crew for hours.

Both these cases could easily have ended differently if the installations had been running critically low on supplies and had put on pressure to keep going. In both cases the crane operator could have just kept silent, giving them scant information about his trustworthiness, wait for the PSV officers to make the call, and leave the officers to decide how far into sub-optimal safety they would risk going before that risk became greater than the risk of getting a bad name.

In the above discussion I argue that PSV sometimes experience pressure from installations to continue operations even though the PSV officers judge that it would compromise safety. I claim that PSV operators have good reasons to not trust that installation crew will understand and respect their safety assessments, and that the installation may give the PSV (and its crew) a bad reputation if the PSV does not comply with the demands (wishes) expressed by the installation. Some PSV crews fear that if they get a bad reputation then that may jeopardise their chances of future contracts, that there are times when they must balance the material safety of crew and ship against the safety of their reputation, and that it happens that they renege on the former to improve the latter. This argument contains several analytical links, and the strength of the entire argument is influenced by the credibility of each link.

Other researchers (Antonsen and Bye 20xx) and Sætrevik et al. (2018) have also observed that PSV crews feel pressured by installations. Sætrevik et al. confirm that PSVs are of the opinion that installations lack knowledge about how PSVs operate. Hence it is reasonable to conclude that these observations are not the product of researcher bias and that the validity of these observations and claims is relatively high. The credibility of the final argument is somewhat more uncertain, however. This claim is made on the basis of one observation, where a few seafarers talked about their experiences when working in bad weather. It may be that they exaggerated, it may be that I, the researcher, misunderstood them. Hence it may be that the relevance or credibility of my claim is too low to pay any attention to. In addition, even if the credibility is high, it may be that these few informants are not representative of PSV seafarers at the NCS in general. Perhaps these few informants are the only ones who have ever reneged on material safety to maintain a good reputation? On the other hand, the relatively high logical and empirical credibility of all the other elements of the argument is a strong indicator that that is not likely. At this stage, however, the only way to find out is to do more research where this particular issue is investigated in greater detail.

7. Implications of findings

As pointed out, it is highly likely that most of my findings are credible in the sense that what I have observed, and my inferences from my observations, are accurate representations of the phenomena I describe and analyse. Some doubts may be raised, however, regarding the claim that PSV crews sometimes renege on material safety in order to maintain the safety of their reputations. This latter claim has not been investigated by other researchers, and more research is needed to find out if the claim is robust or not. In spite of this element of doubt there are several good reasons to take my findings and arguments seriously. One set of reasons are theoretical, the other empirical.

There are two important theoretical reasons: The first is that my findings indicate that safety management cannot be properly understood without understanding that safety is not only a matter of material values like human lives and ships, but also about immaterial values like a good reputation. The second is that trust is not a stable quality inherent in a relationship, but a constant assessment, by one actor of the trustworthiness of other actors. Hence trust is a multidimensional and fluid quality of human relationships that can be both strong and weak at the same time; strong in relations to one aspect of a relationship yet weak in relation to another. Any attempt at trying to find out how trust influences safety thus need to investigate all the different kinds of values that the trust assessments are about.

The second set of reasons are empirical. Some PSV crews still experience being pressured by installations who do not respect safety decisions by PSVs. This finding is robust and has been confirmed by other

researchers. Such pressure happens in spite of massive efforts to eradicate such it. This is obviously a serious threat to the safety of offshore operations at the NCS, and in itself a good enough reason to take my findings seriously. Observations that such pressure happens is, however, not sufficient in order to understand why PSVs are willing to compromise on safety. This question necessitates a somewhat longer chain of reasoning.

I have observed that many PSV crews believe that installation crews frequently lack the necessary knowledge to understand safety decisions made by PSVs and that PSVs therefore sometimes find that they cannot trust the installations they interact with. This is confirmed by other researchers. I have also observed that PSV crews believe the power balance between PSVs and installations are in favour of the latter. It is both common sense and generic social science knowledge that when a more powerful party exerts pressure on a less powerful party, and the more powerful is less competent than the those they put pressure on, and the less powerful party does not trust the more powerful, then it is very risky for the less powerful to oppose the more powerful. In other words, the less risky option is to renege on material safety in order to avoid negative reactions from the powerful.

My findings strongly suggest that the "negative reaction" they fear is that installations will give them a bad name, and that in such situation PSVs must balance material safety against the safety of their reputation. Sometimes they find it less risky to renege on the former in order to safeguard the latter. It is highly likely that my findings and arguments are credible (valid), even though some more research is needed to reduce the element of doubt that lingers. However, in spite of the lingering doubt, my findings strongly indicate that the oil and gas industry needs to reassure and demonstrate to PSVs that their safety decisions will be respected, and their reputation never damaged no matter what those safety decisions might be. This is the same recommendation as provided by Sætrevik et al. (2018), only with the added detail relating to reputation.

8. Conclusion

The aim of this article is to describe and analyse how the low trust in relationships between PSV crews and Installation crews decreases the material safety in cargo delivery operations. Or, more precisely, how the assessments, by PSV crews, of the trustworthiness of installation crews, can/might lead PSV crews to make sub-optimal safety choices. A summary of the argument is as follows:

In offshore operations safety is one of the more salient values at stake, but not the only one. Profit is obviously another value, ~~but~~ and so are respect and reputation. PSV crews need to juggle all these values in an attempt to gain on all parameters without losing on others. Most times that means losing some degree of gain of some values in order to minimise loss on others.

Risk is a matter of gains and losses of valuables. In everyday speech we say that the risk is high when there is a lot of uncertainty about our chances to gain or lose something valuable. In the cargo supply chain several values are at stake, and supply operations thus contain several types of risk. The material values and risks common to all participants are obvious: Keeping installations going and avoiding accidents. In addition are conflicting values: Installations that need supplies vs PSvs that judge it unsafe to deliver; installations that only consider their own situation vs PSvs that considers the entire schedule, and PSV crews that are fatigued and wish to seek shelter vs installations that wish them to stand by. On top of these material values and risks are social values and risks; for Norwegian PSV crews respect and reputation.

PSV operator must balance these "risk-mixes" in different ways, which means that they also face different kinds of "trust-challenges". As they usually have very little information about the installation crew they are dealing with at any time they also have very little information about their trustworthiness. Trusting them is thus very risky, particularly with regards to the reputation they will give the PSV. In such situations PSVs face several dilemmas: With regards to material values they he can maximise the material safety of installation, vessel, cargo and crew, or they can maximise the desires of installations to deliver cargo even though conditions are poor. Within this decision lies the other dilemma: To risk being treated with disrespect and be given a reputation as a bad ship if they do not do what installations want. Sometimes, when they have too little information about the trustworthiness of an installation crews, PSV crews chose to renege on the material safety to avoid a potential loss of reputation.

9. Further research

The argument presented in this article is based on qualitative material. It shows that conflicting interests, complicated trust issues and concerns about reputation influences decisions and have the potential to decrease safety. It is, however, based on a small number of observations and more qualitative research, specifically aimed at producing more thick descriptions of the same phenomenon, is needed. As any qualitative research it also does not provide robust data about how frequently it happens that PSV crews must balance the safety of their reputation against the material safety of crew, ship and installations, or how the phenomena is distributed among PSV crews in general. Quantitative research that investigates how many offshore operators have experienced such "trust-challenges", and how often they have experienced them, would be valuable. It would also be important to quantify how frequently they compromise on material safety in order to guard their reputation, as well as their evaluations of how seriously they believe these situations decrease the material safety of operations.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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